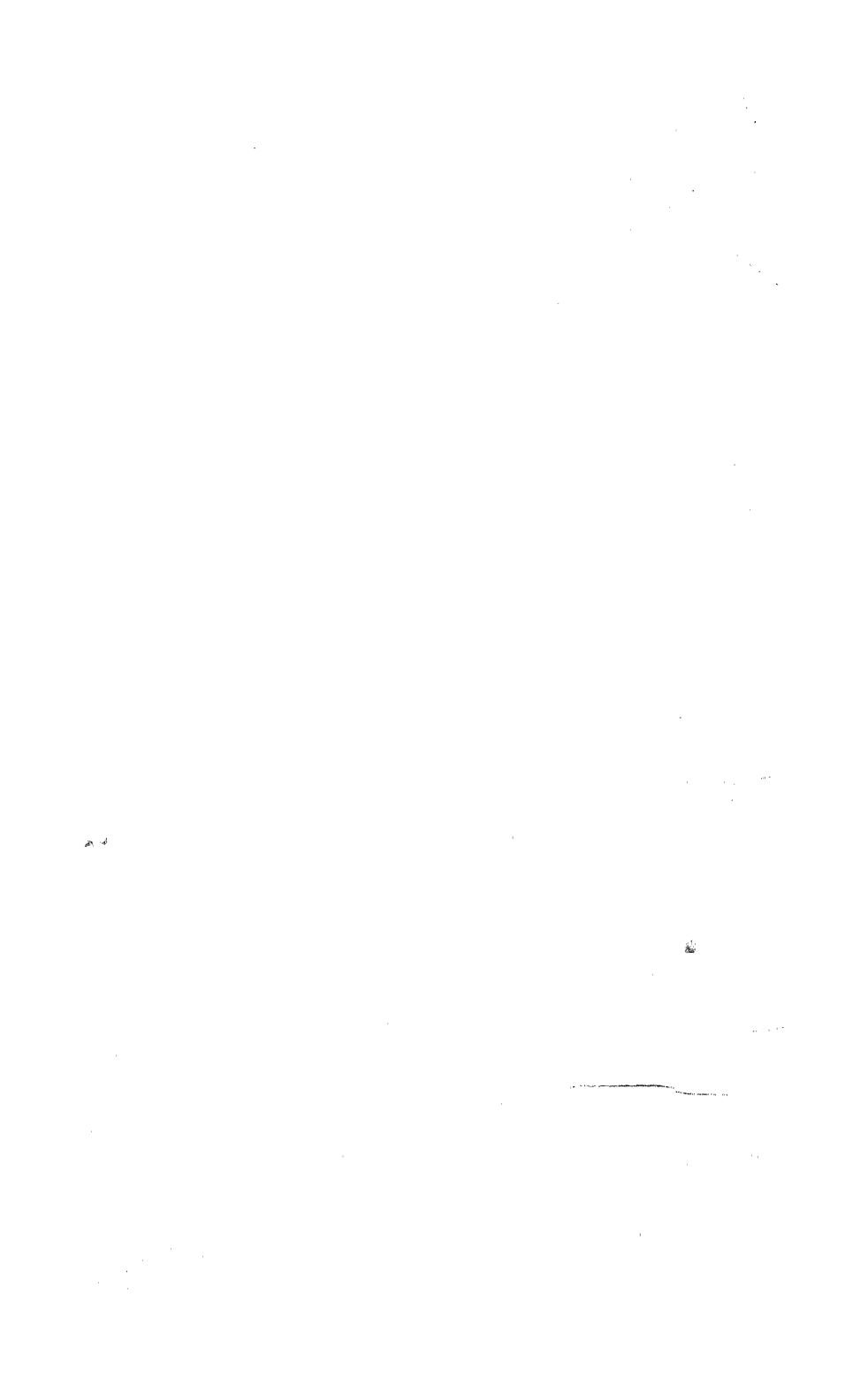




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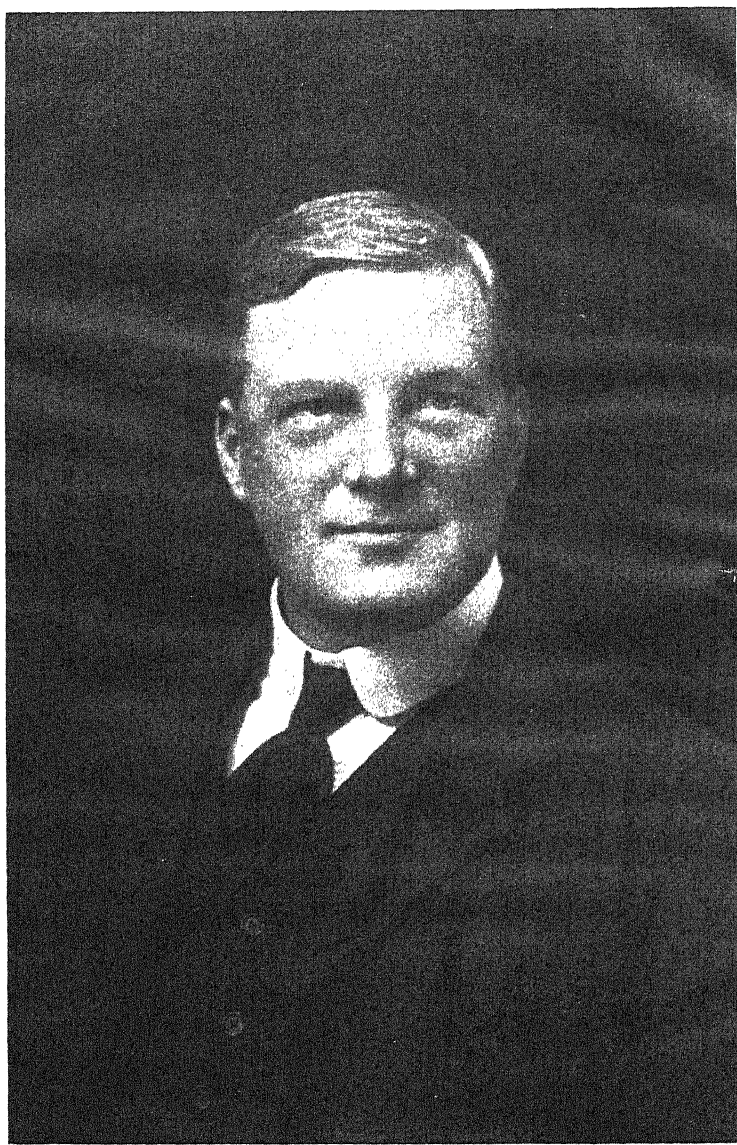
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The Association does not guarantee the accuracy of the statements contained in the various contributions to this Journal, nor does it necessarily, as a body, endorse the conclusions and views of the contributors: the authors themselves are solely responsible.



VISCOUNT ELVEDEN, C.B., C.M.G., M.P.,
President of the British Dairy Farmers' Association, 1922 and 1923.

VISCOUNT ELVEDEN, C.B., C.M.G., M.P.

PRESIDENT, 1922 and 1923.

VISCOUNT ELVEDEN, after two years of service in the office of President of the British Dairy Farmers' Association, has relinquished his duties to the general regret of the Members.

A Dairy Farmer himself, keeping two large herds of Dairy cattle, one for the production of "Certified" and the other for ordinary milk, both he and Lady Elveden know the difficulties of the business from A to Z, and his Lordship has, in consequence, brought a specially sympathetic understanding to all the deliberations of the Council. Through ill-health during his term of office and pressure of his duties in Parliament, he has not been able to devote as much time to the work of the B.D.F.A. as his own personal inclinations would have led him to do, but, on many occasions, his far-sighted views have been of great value to the Council. Notably, many will remember how, at the very beginning of his office, he persuaded the Council to act on the sound and safe motto, *Audi alteram partem*, with the result that, instead of taking a one-sided view on the question whether the railways should or should not be allowed to run their motor vehicles on the ordinary roads, the Council were enabled to draw up a statesmanlike resolution after having heard both sides.

Throughout his Presidency he has been on the side of progress and improvement, but always aiming for caution and safety.

Those who, on the occasion of the Dairy Conference in Reading, heard his reasons for the intense interest he has taken in the National Institute for Research in Dairying, will always remember his words. He then told us that he attributed the great success of his own special business to the fact that his firm had "banked all" on Scientific Research, with such satisfactory results that he could not do otherwise than do his utmost to provide the great Dairy Industry with like facilities, and undoubtedly his wise foresight is now bearing fruit to the lasting benefit of all those who are engaged in the Dairy Industry, and to the still greater benefit of all consumers of Dairy Produce—that is, the whole world.

At considerable personal inconvenience, both Lord and Lady Elveden took part in the memorable Dairy Conference in Denmark, and so greatly added to our prestige, doing all in their power to help the Conference Members to enjoy an instructive and pleasurable visit to Denmark.

From the days when our late President was known as "The Hon. Rupert Guinness"—a great sportsman and winner of the "Diamond Sculls"—up to the present time he has been one of the great Champions and Benefactors of our London Hospitals, and perhaps no one has done more directly and indirectly to benefit their finances.

"Prevention is better than cure," and realising that a good and adequate milk supply can do much to lessen the pressure on our hospitals, it was characteristic of the man that he should go all out to secure for Great Britain the immense advantages of bringing science to the aid of the British Dairy Industry. More than once Lord Elveden, by his great generosity, has saved the National Institute for Research from stagnation and alone made its path towards progress possible.

His aim has been that our Industry, in the matter of Scientific Research and Education, should be at least as well equipped as similar industries in other countries—right nobly has he carried out that aim. Though the Industry itself, at present, hardly seems to realise the advantages that are now accruing to it through Scientific Research, which he has done so much to make possible, there can be no doubt that future generations will recognise what great benefits Lord Elveden has conferred on them.

Lord Elveden is not content with helping and saving the National Institute for Research in Dairying, but, in his spare time is constantly carrying out scientific research in other directions which are likely to be of lasting benefit to the community. His own cowsheds show an original and practical mind, and it will surprise many to learn that he obtains gas for lighting and heating purposes from his manure heap and other refuse, without detracting from the manurial value to the land.

Though Lord Elveden has relinquished his Presidency of the British Dairy Farmers' Association, those who are keen on the scientific progress of the Dairy Industry will rejoice to know that he is continuing as President of the National Institute for Research in Dairying, and we must all trust that his health and vigour will be completely restored.

EARLY DAYS OF THE BRITISH DAIRY FARMERS' ASSOCIATION: 1876-81.

By H. S. HOLMES PEGLER.

It would be interesting, if it were possible, to know exactly whose brain it was that first conceived the idea of forming a British Dairy Farmers' Association. It might, with good reason, be ascribed to Professor Sheldon of the Royal Agricultural College, Cirencester, author of Cassell's "Dairy Farming," or to Mr. E. C. Tisdall, father of Alfred Tisdall, of recent years, both having been pioneers in the movement. It is certain, as I well remember, that Mr. Tisdall took from the outset a leading part in the organisation and direction. There can be little doubt that whoever had the Institution in mind in the first instance associated with it the Dairy competitions, for the matter had been much discussed in the agricultural press and Dairy circles, the only question being where such a show should be held, Alexandra Palace and the Crystal Palace being both suggested. While this was being considered, however, someone with sharp business instincts from outside promptly settled the matter by announcing the holding of a Dairy Show at the Agricultural Hall.

A year or so before this took place, the Islington building, erected by the Agricultural Hall Company for the purpose of the Cattle Shows, was unoccupied save by the Smithfield Club in December and a Horse Show in the spring. A small syndicate was accordingly formed called the "Agricultural Hall Auction and Agency Company," with Mr. John H. Raffety as Managing Director*, to lease the building for the rest of the year for holding sales by auction of live stock. In addition to the Main Hall the various rooms now used for the Dairy Shows were included in the lease. The original object of the promoters, to establish another "Tattersall's" having failed, however, the place was sub-let at odd times for walking matches, flower shows and such like, and later for the Brewers' Exhibition and the Royal Military Tournament. The first two Dairy Shows came in this category, and it was while the former of these was in progress that a meeting was convened at the Hall at which the British Farmers' Association was inaugurated, October 24th, 1876. Happening to be one of the judges at that show, I was invited to join in the undertaking and, being interested in dairy matters on a small scale, I readily agreed. As the first Dairy Show had no connection whatever with the B.D.F.A. I need only give a passing allusion to it. This I am the better able to do having recently turned up by chance a bound catalogue and prize list—which I shall have pleasure in presenting to the Association to complete

* Other Directors were: Viscount Combermere, Clare Sewell Read, M.P., James Odams, John Collins, Joseph Druce, Robert Leeds, and Chas. Dorman, the last named being a Director of the Agricultural Hall Company. We were so closely associated with the A. H. A. & A. Co. in those early years that these names seem worth recording.

the official record of these shows from the commencement. The price was 6d. Amongst the Committee (on paper) were the Directors of the Auction Company already mentioned and other well-known names at that period and since, such as:—Rear-Admiral Saumarez, C.B., of Jersey, Walter Gilbey (afterwards "Sir Walter"), J. P. Sheldon, Chas. Howard of Bedford, John J. Coleman of Norwich, G. M. Allender, and J. K. Fowler of Aylesbury, famous for his poultry. There were six classes of cows "for Dairy purposes," of which three were for Channel Island breeds only; seven for cheese, with an extra one for one-ton lots; one class for fresh and one for cured butter (in tub, pot or cask); two classes for goats; two for roots; eight for grain (wheat, oats, barley, beans and peas); one class for hops; and a class for "Dairy utensils, fittings and implements"—the 1st prize, a Silver Medal, being awarded to the Aylesbury Dairy Co. The Poultry section comprised 20 classes for fowls and five for ducks, geese and turkeys. There were no pigeons. Five stewards were selected for live stock and produce and one for poultry, a big contrast to the present day!

Returning to the affairs of the newly formed Association, the chair was taken at the inaugural meeting held during this Show by Mr. John Coleman of Derby, who in his opening speech remarked on the great need there was for such an institution and the vast scope presented for the activities of such a body, adding that, "once started there was no knowing to what limits the movement might extend." Professor Sheldon then read the paper he had prepared for the occasion, setting forth in some detail the proposed operations of the Society. This paper was published in the first volume of the Association's Journal. Other speakers were Dr. Voelcker, analytical chemist of the Royal Agricultural Society, Mr. J. G. Crompton of Derby, who became the first President, and Mr. Whitaker, who was editor of "The Farmer" newspaper, incorporated, I believe, later with the "Agricultural Gazette." To this member of the committee was allotted most of the literary work. The subscription was fixed at 10s. 6d. Mr. Henry F. Moore, a journalist, and Mr. Morgan Evans, whom I do not remember ever to have seen at any meeting, were elected Joint Hon. Secs, the former carrying out the duties—after a fashion.

The first committee to be elected consisted nominally of 14 members residing in various parts of the country, but the actual management was centred in a small executive body of six or seven who lived for the most part in or near the metropolis. Of this number one of the most active and efficient in the quite early stage was Mr. G. M. Allender, Managing Director of the Aylesbury Dairy Company, who had charge of the work of the Dairy at the shows of the Royal Agricultural Society and figured in the same capacity at the first Dairy Show in the Hall. Being a very pushing and businesslike man there can be little doubt that, had he continued on the committee, the Association would have progressed quicker in those early days than it did, but at the first annual general meeting in 1877 he expressed

himself highly dissatisfied with the way in which the work was being carried out and protested against the small balance of cash in hand, £17 10s. 0d., which he said would not meet the cost of the medals, and withdrew his name, together with that of his Company, from the list of members. He rejoined later. The first act worth recording was the appointment of Professor Sheldon as a delegate to visit and report on the International Dairy Show to be held early in that year at Hamburg, his report being afterwards published in the *Journal*.

Before six months had elapsed the country was visited—as it has been on so many occasions since and now in particular—by an epidemic of cattle disease, then called “the Cattle Plague.” This happened just as steps were being taken to hold a second Dairy Show in the spring, and led to the the following resolution being passed:—

“This Committee deplore the existence of cattle disease in the neighbourhood of the Metropolis, and think that the regulations of the Privy Council with respect to the importation of live stock are utterly inadequate for the purpose. They would recommend that all fat cattle should be slaughtered at the port of debarcation and that store stock and breeding cattle should be kept in quarantine for a fortnight, by which time the probability of the propagation of disease would have passed away.”

The proposed spring Show was accordingly postponed to October, but although no fresh cases of the epidemic had been reported, the Privy Council refused to relax their restrictions and so the Dairy Show of that year, which, like the first, was a business venture of Mr. Raffety's Company, had to take place without a single head of cattle being present. The space previously allotted to cows was occupied by mules and donkeys, and there was a big show of goats to represent the dairy. The two former of these exhibits, being huge animals standing 16 and 17 hands high, were perhaps a greater attraction, as an uncommon spectacle, to the Londoner than the cows and heifers would have been, and the gate was probably little affected by the change. I may be perhaps forgiven if I digress somewhat from my subject here to recount a rather amusing episode that took place on this occasion. There was a sales office erected in the Hall at the window of which visitors presented themselves who wished to make purchases of such exhibits as were down in the catalogue as “for sale.” Among those who had entered mules was the Duke of Wellington of that day—son of the famous “Iron Duke”—and he applied at the window to buy a goat, being interested in those animals. A man who had just left the spot with the same object had given his name and address as requested, the latter being mentioned as “The Marquis of Granby.” When his Grace was asked for his name and gave “The Duke of Wellington,” the unfortunate clerk thinking he had to do with another person whose residence was a “House of Call,” without regarding the speaker exclaimed, “That's all right for your address, but I want your name first, please.” The purchaser looked puzzled, and in the silence that followed a fellow clerk raised his eyes and recognising the important

personage before him (having been in the army), hurriedly whispered, "That's all right, it's the Duke himself." I was not a witness to this little comedy, but the official last mentioned told me the circumstance. Some three years later when I happened to know the Duke personally I related the story to him and he was much amused. Being very deaf he had not heard the suggestive remark.

The Dairy Show of 1877 was, as I have said, like the first under the management of Mr. Raffety, but recognising the advantage that would accrue towards the success of these exhibitions if the Association were connected with them in some way, it was agreed that certain representatives of the latter should meet, as occasion required, to advise those in charge of the management in all affairs relating to the Show, and have authority to decide as to what prizes, medals and certificates should be given. It was on this occasion that the first annual general meeting was held, which took place in Mr. Raffety's room, now used by the Chairman of the Show Committee. When I state that the meeting was called, not by circulars to members individually in the usual manner, but by notices in a few agricultural papers and placards outside the building, it will not be wondered at that the attendance was very small. These consisted of Messrs. G. Allender, G. Barham, E. C. Tisdall, H. T. Crump, J. H. Raffety, T. Whitaker, T. W. Nuttall, H. Ray, John Welford and myself. It was then that my old colleague, John Welford, was elected with me on the committee, and I may here remark that we are the only members of that period who are still in the Association to-day.*

Amongst others elected on the committee at that date may be mentioned Lord Richard Howe Browne, Thos. Nuttall and H. T. Crump, while the names of Alfred Tisdall and Alfred Stapleton (father of the present chairman of our Finance Committee) were added a few months later. No new president had been nominated and no report of the year's work was submitted for adoption, but it was stated that the number of members was roughly about 200. This, however, was only on paper, for many subscriptions had not been paid. The minutes—so called—consisted of about 150 words, the meeting, in fact, being such a farce as a general assembly that it was adjourned to be held at the Cattle Show.

1878.

The year 1878 was fraught with many important events. It opened with a special meeting of the committee on January 2nd, called to consider a proposal by Mr. Raffety, on behalf of the lessees of the Hall, that the Association should take on the management of the forthcoming Show in October upon terms somewhat analogous to those arranged between the Agricultural Hall Company and the Smithfield Club. The Auction and Agency Company were to hand over to the Association £1,000 on condition that it gave away £1,500 in prizes, the latter to receive the entry fees in all classes, to undertake the secretarial work and pay the judges. The lessees of the Hall

to provide all labour, fittings, food for cattle, &c., and take space fees, with, of course, all gate money. As the Society had at that date no legal status it was understood that it could only be bound in honour in such an undertaking. The matter was first submitted to the members by circulars for their opinions and afterwards referred to a special general meeting called on January 29th at which the scheme was adopted, and Messrs. E. C. Tisdall, Nuttall and Crump were appointed Trustees to act for the Association in executing the proposed agreement. Before any further move could be taken, however, it was deemed necessary to open a guarantee fund to provide against any possible shortcomings. The amount required was stated as £500, but the committee were authorised to use their discretion to proceed if satisfied that a less sum would suffice. Eventually the amount obtained was £300. Mr. Raffety and his co-directors made themselves responsible for £50 and most of the committee together with members outside that body contributed.

The next matter of moment was a change in the secretaryship. Mr. Moore not having been present at any meeting since January 15th, which caused much complaint, the committee on June 25th passed a resolution that "the Hon. Secretary having several times mentioned his desire to retire, as his literary labours prevented his giving sufficient attention to the duties, his resignation be accepted." As a sequel to this I was asked to take on the work and agreed on certain conditions, my appointment taking place formally on July 2nd, 1878. Almost my first act in my official capacity was to move for the appointment of a solicitor who should be instructed to take the necessary steps to place the Association in a position to sue or be sued, as circumstances were indicating the probability of legal action being necessary at no distant date. Steps were accordingly taken with this object. Meetings of the Committee were being held frequently during the summer months in making arrangements for the autumn show, and one matter which had been much delayed was put in hand forthwith. This was the supply of medals. Many complaints were coming in from exhibitors to whom such awards had been made at the 1877 show, that the medals had not been received. Mr. Harrison Weir, a somewhat famous animal artist of that period, was asked to submit a design, which was duly approved, and gold, silver and bronze medals were eventually struck and distributed to the winners. The picture side was afterwards reproduced on a smaller scale as a die for stamping official stationery. On August 2nd something like a bombshell was dropped at a committee meeting summoned hurriedly for that day when it was announced that a petition by Mr. Raffety to wind up his Company had been announced in the "Times" newspaper. In view of the fact that the agreement we had entered into with that Company was based on its paying us £1,000, this announcement was not a little alarming, and strong comments were made that no explanatory statement of the affairs of the Company had been given us by the Managing Director who was a member of our committee.

Eventually matters were settled by Mr. Raffety undertaking, in the event of the Company being wound up, to become personally responsible for the payment of the money. The petition for winding up was later, however, withdrawn. My duties as secretary were not a little embarrassed by the unfortunate financial position of the Society as regards subscriptions and other matters much in arrear, and the Treasurer was asked to arrange for an audit of the accounts which, however, presented certain difficulties and was much delayed in execution.

The next business was to arrange for the appointment of a President. The name of the Duke of Westminster was first suggested and next that of Lord Bective, but neither accepting the invitation when applied to, Major-General Burnaby, M.P., of Leicester, who had been elected a Vice-President early in the year, was requested by Mr. Nuttall, on behalf of the Society, to accept the post, the General being known to him personally, and so the Presidency was filled. This was a very auspicious move, for not only did General Burnaby take an active part in the work of the Association for some time, but it was through his influence that the Society became honoured by having the Prince of Wales as Patron, the Royal patronage being continued when the Prince became King.

The Third London Dairy Show opened at the Hall on the 10th October, 1878, and was in every way a great improvement on its predecessors. The fact of the management being in the hands of the Association on this occasion inspired confidence. Every exertion possible was taken to ensure that the prizes were paid directly after the show, with medals following as soon as they could be engraved. This was done on account of complaints of long delays in such matters in connection with the shows of 1876 and 1877. A striking feature was made in the centre of the Hall by Mr. Nuttall's exhibit of a huge pile of Stilton cheeses which almost reached to the roof of the building. It was supposed to imitate Cleopatra's Needle, which had been recently brought from Egypt and erected on the Thames Embankment. The classes consisted of Shorthorns (pure and non-eligible for H.B.), Ayrshires, Jerseys, Guernseys, Kerries, Brittanies, and Any Other Variety, pure cross or mixed. Of heifers there were three classes—Shorthorns, Jerseys, and A.O.V., and the same for bulls. The prizes ranged from £25, £15, £5 for 1st, 2nd, and 3rd, to £20, £10 and £5 for cows and bulls, and £15, £10 and £5 for heifers. The goats numbered 100.

The cheese classes were for Cheshire, Cheddar and Scotch Cheddar, Derby and Leicester, Gloucester (no entry), Wiltshire, Stilton, American or Canadian and Any Other Variety. There was likewise a "cheese fair" for quantities of not less than one ton, which was continued for many years after. A competition was introduced, which was dropped after a few Shows, for the best model or drawings of dairy homesteads.

The 1878 show resulted in a profit of £90, and at the annual meeting a cash balance was announced to the credit of the Association of

1879.

Important changes took place early in this year. As the result of a decision come to at the meeting above mentioned, steps were taken to place the affairs of the Society under the direction of a Council. A list containing 54 names had been circulated amongst the members, who were requested to vote for 36 to form the new governing body. Some of these it is not necessary to mention, but those of my colleagues who became fairly regular attendants at those gatherings were:— Lord Richard Howe Browne, General Burnaby, E. C. and A. Tisdall, Professor Axe, Professor Sheldon, Professor Symonds, John Treadwell, H. Tait, H. T. Crump, R. Dale, T. Nuttall, W. Whitaker, A. Stapleton, M. Walker, John Welford, F. W. Wilson (from the Crystal Palace), J. H. Raffety, R. Dale, Gilbert Murray and Garrett Taylor. Professor Symonds was Principal of the Royal Veterinary College and Professor Axe was also engaged there. Henry Tate had charge of the Queen's "Prince Consort's Show Farm" at Windsor, and through his influence Royalty figured regularly afterwards in the list of exhibitors. Garrett Taylor and John Treadwell, two well-known agriculturists of those days, were members of the Council of the Smithfield Club. The latter had a striking personality, his appearance corresponding exactly with the typical "John Bull." He was the only man I ever knew to wear a genuine beaver top hat, supposed to be white but really with a pinkish tint. Robert Dale was Secretary of the Company of which Mr. Raffety was the Managing Director and a brother of the member of the firm of Squire, Dale & Co., who started the Brewers' Exhibition. It will be seen further on that the executive body did not actually sit as a council until the following year.

In perusing the Minute Book of that period I am reminded of a circumstance which I had quite forgotten, but which is, perhaps, worth recording, viz., that after the patronage of the Prince had been obtained I proposed to rename the Institution "The Royal Dairy Farmers' Association of Great Britain." The motion came before the Council and was much discussed, but eventually lost by one vote, Mr. E. C. Tisdall being opposed to it on the ground of expense as we should have had to order a fresh die for medals. We had to study economy in those days.

The Association was now beginning to "feel its feet," and an ambitious move was suggested by Mr. Gilbert Murray in the proposal to inaugurate a Dairy School. This, after much discussion, was referred to the general meeting at the end of the year, when it was decided that, having regard to the outlay which such an institution would involve, the matter be deferred till the funds were in a better position. At that meeting only eight members were present outside the committee. The Earl of Egmont was elected President, and I was re-elected Hon. Secretary. The first Statement of Accounts and Balance Sheet was presented for adoption, and as the figures may be interesting as a

CASH ACCOUNT, 1879.

	£	s.	d.		£	s.	d.
Balance from 1877—				Show Expenses	...	...	1,052 5 0
Cash at Bank ...	...	6	17 11	Wages	...	...	47 14 11
" in hand ...	...	10	3 3	Printing and Stationery	...	...	128 19 2
Subscriptions ...	...	...	...	Advertising ...	...	...	29 10 6
Prize Fund ...	...	...	...	Judges' Expenses	...	...	48 5 0
Dairy Show, 1878, Receipts ...	...	...	...	Postage	...	...	34 4 0
				Miscellaneous	...	...	16 18 4
				Expenses on account of 1877 Medals	£66 11 0	...	
				Advertising ...	1 2 6	...	
				Miscellaneous	7 0 6	...	
				Balance	...	...	74 14 0
							138 6 11
							£1,570 17 10

BALANCE SHEET.

	£	s.	d.		£	s.	d.
Outstanding Accounts—				Balance	...	...	138 6 11
H. F. Moore ...	...	18	0 0	Outstanding Accounts—	...	...
Agricultural Auction and Agency Co., Ltd.	...	61	15 10	On Sales	£90 9 1	...	
				Members' Subscriptions	4 14 0	...	
Cash at Bank	...	135	1 7				95 3 1
" in hand	...	17	18 7				
Petty Cash ...	...	0	14 0				
							£233 10 0

If I recollect right it was at the 1879 show that some trouble was created with the police. It was Mr. Raffety's business to engage members of the force under control of an Inspector to maintain order, and this he had done. It happened that when the cattle were released from their stalls at the close of the show to be sent home, several cows got loose and ran among the crowd leaving the Hall. Mr. Welford, as a cattle steward, was in charge at the time, and he and the Inspector, a very pompous individual with a great idea of his own importance, "had words," and in no modified degree, as to responsibility, the Inspector actually threatening to "run him in"! There was, mixed up with this affair, a rather quarrelsome and hot-tempered exhibitor who had a stall for butter and cheese which had got damaged by the rush, and, he, too had something to say in the matter, which led to the Inspector including him also in his complaint to the Council. The name of this individual was Jubal Webb, but when asked to whom the complaint referred, the Inspector said he could not recall it, but that it sounded to him like Tubal Cain! It was also at the 1879 show that attention was first directed to offering prizes for milk production, but this was done in so elementary a manner that it will cause some surprise to those who manage such competitions at the present day. There was no separate milking class, but Specials were awarded, one for each breed of cow, for the animal yielding at the time the largest quantity irrespective of date of calving and with no consideration as to quality. As an experiment, Dr. Voeleker selected twelve samples of milk from exhibits of the various breeds in the Hall, and these he analysed in order to ascertain their respective composition. What may seem strange to Jersey breeders, an Ayrshire was shown to give the richest milk in butter-fat, and the Dutch—though this occasioned no surprise—the poorest, some samples showing only 2.25 per cent.

A competition conducted under such crude conditions brought a letter of protest, dated 10th November, 1879, from Lord Richard Howe Browne (see page 81 of *Journal*, Vol. 1, Nos. 3 and 4, published 1st September, 1881) in which he remarked:—

"The conditions under which the milking prizes were awarded at the late show, viz., by simply measuring or weighing the quantity of milk irrespective of its quality or of the time that had elapsed since calving, do not seem to me to be calculated to ensure the prizes being given to the most deserving animals."

A sub-committee was afterwards appointed (the question having previously received the attention of the Council) to carry out the recommendations, as far as practicable, as contained in the letter of which the above is an extract. The committee consisted of Dr. Voeleker and Messrs. E. C. Tisdall, Thos. Nuttall, W. T. Carrington and John Treadwell, but it was not until 1881 that effect was given to the recommendations of that body.

Another important event to record during 1879 was the registration of the Association as a "Company limited by Guarantee," which occurred on October 1st. The signatories to the Memorandum of Association in compliance with the Act were Dr. Voelker, E. C. and A. Tisdall, G. Taylor, G. Murray, W. Freeman, H. Tait, R. Dale, T. Welford and the present writer. The legal charges for this amounted to £62 12s. 8d. As a result of registration each member's liability was restricted to £5. By this date the secretarial work had become pretty heavy and more than I could deal with alone, being only able to devote a portion of my time each day to the duties, so an assistant secretary was engaged. This was Mr. F. Morrison, to whom we paid at first a salary of £40, and afterwards £50*, sharing his services with the National Chamber of Trade, of which he was the appointed secretary. At the same time our offices were moved to be connected with those of that Institution at 446, Strand, we contributing £20 a year towards the rent.

1880.

Compared with the year preceding and that which followed, this year had perhaps matters of less moment to be recorded. For one thing, however, it saw the entry into the Society's affairs of Mr. G. F. Roumieu, at that time Deputy and later Chief Coroner for East Surrey. Being by profession a barrister, his advent on the Council was a decided gain, and it was not long before he was elected as Chairman of the Show Committee. His valuable services in that capacity will be well within the memory of many members of to-day. Roumieu's first official position at the Show was as a steward of finance, and he was fond of relating how on this first occasion when he and I shared a double bedroom in Barford Street we lugged the big bag of silver, the proceeds of the day's take at the turnstiles, into our room and tossed as to whose bed it should be placed under for security. This was before we had cashiers from the bank to take away the money, a move that was started the following year. In this connection, some 18 or 20 years after, an unfortunate event occurred. The old-fashioned growler was then still in vogue and a rickety specimen happened to have been selected for the bank clerks to return in with the bags of cash from the stiles, the weight of which was such that the bottom of the vehicle fell out en route much to the consternation of those having charge of it.

The first meeting of the executive as a Council took place on the 1st of June of this year, delay in this direction having been occasioned through a strong desire to get all arrears as far as possible settled, so that the new governing body should not be hampered as the original one had been. The outstanding £18 which figured on the last balance sheet had consequently to be wiped off the slate as a bad debt, the usual legal attempts to recover it having failed. From this date the Council met regularly on the first Tuesday in each month and its

* Mr. Morrison also received a bonus of 100 guineas for extra work at the Show.

affairs were then being conducted in a more formal and businesslike manner, Financial and Journal Committees being appointed.

On October 12th, as the Dairy Show was closely approaching, it was discovered that Mr. Raffety had had the tickets of admission printed with the heading "Metropolitan Dairy Show," instead of giving the name of the Association. Much indignation was expressed at this, and the tickets had to be called in and cancelled and fresh ones printed. This was a sort of "last straw" of many grievances, and as this year concluded our first agreement with the Auction and Agency Company the Show Committee issued a strong recommendation to the Council that the Association should in future hold these shows, if at the Agricultural Hall as before, entirely independent of that Company. It may here be mentioned that Mr. Alfred Tisdall, at the 1880 Show took over the management of the Dairy, a duty he carried out with great success for many years after. Mr. George Barham's name figures for the first time on the Show Committee on this occasion, that body not comprising the whole council as in later days.

1881.

With this year, my chronicle of events, as far as it goes, comes to a conclusion. It had been strongly urged by the President, Lord Egmout, at the last general meeting, that we should on the next occasion take the Show to Birmingham, so a sub-committee was formed to visit that city and to discuss with the mayor the arrangements for carrying out this proposal, though it must be admitted that the idea of leaving London was not to the liking of many members of the Council. That being the case the same sub-committee afterwards visited several possible sites in the Metropolis, amongst others the Baker Street Bazaar (afterwards called the Portland Rooms) and the Columbia Market. This vast building in the East End, I may mention, had been erected some years previous at a cost of £200,000 by the Baroness Burdett Coutts to compete against Billingsgate Market with the view, I believe, of breaking the ring, or combine, which controlled the supply of fish to London. For this purpose, however, it proved a failure, and when we went over the place all the stalls were empty, only the Central Hall being occupied. The sub-committee went into the probable cost of the Show, if held here, taking into consideration the important fact that Lady Burdett Coutts was kind enough to say she would charge no rent if we should decide to accept the offer. In the end, however, both this site and Birmingham* were abandoned and we found ourselves once again falling back on the Agricultural Hall as the only suitable place, but under a different arrangement. Mr. Raffety was desirous that the terms upon which our engagement with him had been carried out should be repeated, but strongly urged dividing the Show into two parts, the cattle, goats, poultry and pigeons to be held in the spring and the Dairy exhibits

* Birmingham held its own Dairy Show that year.

and competitions in the autumn. This, however, the Council would not hear of. Another serious obstacle was presented and this was fought against as long as possible. We were informed that whatever conditions might be arrived at with regard to the Hall the Show would have to be held in the *middle of September* and not in October as formerly. The reason given, if I remember rightly, was that the Smithfield Club, or the Agricultural Hall Company, objected to the Dairy Show coming so close to the Cattle Show, and we were told that Mr. Raffety was bound by some new agreement in this connection. Influence was brought to bear on members of the Club and on Directors of the Agricultural Hall Co. to try and get this annulled, but with no satisfactory result, so finally an agreement had to be concluded once again with Mr. Raffety, but this time we were to hire the Hall at a rental of £500 and hold the Show on our own from the 15th to the 20th September (inclusive). A guarantee fund had been decided on, as the Council realised that they were taking a great responsibility, but there was no difficulty on this occasion in getting support, £456 being quickly forthcoming. Fortunately, however, the result of the Show was such that the guarantors had not to be called upon on this occasion. A further change of offices took place on June 28th when the Council met for the first time at 191, Fleet Street, our new address. It was on this occasion that it was proposed by Mr. Rounieu to invite the Lord and Lady Mayoress to visit the Show with a further request that the City Corporation should offer some Special Prizes. Thanks to the influence of some of our Council amongst the city authorities, both applications met with a ready response. £30 was voted annually for many years after and the last day of the Show was rendered more attractive by these visits of the Lord Mayor's party. An important visitor to the Dairy Show almost from the first was the late Baroness Burdett Coutts, whom I had the honour to know intimately through her close association with goats and the British Goat Society, of which she was Patroness. It was chiefly to these classes that her attention was directed, though she took an interest in the Exhibition generally. I recollect on one occasion when conducting our august visitor past the bacon and hams section she expressed a particular desire to stop and inspect the exhibits there. It turned out that her ladyship was anxious to find out from someone in authority the reason why bacon tasted so different then to what it used to in her younger days, a point which had previously struck me, though I had learnt by that time the cause. The Baroness always drove into the body of the Hall in her carriage and pair—there was room in those days—a privilege shared only by the Lord Mayor and Sheriffs.

Another personality I well remember was Canon Bagot, a typical Irishman, who came in charge of the Irish exhibits of butter. The 1881 Show being started in the middle of the week and extending over the Sunday, it was decided to hold Divine Service in the building on that morning for the benefit of the stockmen. This took place in the Shepherd's Room and was conducted by the Canon, a fine

specimen of a man and a cleric, with a big rotundity, a large, good humoured face and a rich powerful voice. He was a fluent speaker with a delightful brogue. Like others of his countrymen in the House of Commons he took care that exhibitors from the Emerald Isle got all they were entitled to, if not more !

It may be worth mentioning that at this Show Mr. A. Tisdall was authorised to engage *two* dairymaids ! Many of the stewards had more than one post assigned to them, thus while Mr. Welford was acting as steward of cattle he was also on duty among dairy utensils and fittings—which he shared with Mr. A. Stapleton. Mr. E. C. Tisdall combined Finance with Plans and Drawings of Dairy Homesteads and Mr. Roumieu Finance and Cattle. Our worthy Secretary, Mr. B. Ravenscroft, figured on the Dairy Show stage on this occasion for the first time, being appointed steward of goats, having joined the Society as a member the previous August. In 1896 I had the pleasure of nominating my old friend as a Member of the Council and of seeing him elected after having given his services for some years as Honorary Auditor.

At the annual general meeting this year it was agreed to adopt the proposal of the Council to increase the subscription of membership to £1, retaining the 10s. 6d. only for Dairy Teachers and Students.

This was my last meeting in the capacity of Honorary Secretary. The Association was by now well established, the meetings of the Council and Committees were held regularly as at present and the Show was at last conducted upon lines which enabled our finances to improve considerably afterwards. Moreover, my assistant secretary was by this time sufficiently trained to carry on the duties and he was evidently desirous of stepping into my shoes, a move I had no wish to hinder or delay. The Council realised, as I did, that the duties which were fairly light when I undertook them were now sufficiently heavy and important to require someone who could be at the office all day and devote his whole time to the work, and this I was unable to do. I therefore tendered my resignation on the 3rd January, 1882. My colleagues very kindly signified their appreciation of my services by presenting me with a handsome silver tea service, which will become an heirloom in my family. I was also invited to take on the editorship of the Journal, a post I occupied for some years. When I compare the position, influence, and organisation of the B.D.F.A. to-day with what it was as I knew it when first taking part in its direction, I cannot but feel some pride in having shared, in however minor a degree compared with some others, in placing the Institution on its present pedestal. My chief desire now is to live to complete my fifty years of membership, which will happen, all being well, in two years time, when the Association will celebrate its jubilee.

MEASUREMENTS AS AN AID TO INTER-BREED COMPARISON.

By STEPHEN BARTLETT, M.C., N.D.D.

PRIZE ESSAY.

IN order to compare the economic productivity of dairy cows of different breeds, methods must be found for stating :—

- (a) The costs or outlay necessary in each particular breed.
- (b) The value of the produce,

and the number of factors involved under these two headings will be found to be so numerous that the task seems well nigh impossible.

For example, most Breed Societies claim "constitution" as one of the great assets of their particular breed, and in the absence of a clear method of stating constitution, it is difficult to compare breeds in this character. There is little doubt, however, that breeds do vary as regards constitutional strength, and very little thought is required to see that this point will affect the item "depreciation of animals" in the cost of producing milk, or the "labour bill," in that more skill and time will be necessary in housing and tending weaker animals if losses due to sickness are to be avoided.

While many of the points often brought forward as characteristic of certain breeds are purely imaginary, there are two outstanding features in which great variation is found.

1. Breeds vary in quantity and quality of milk produced, and although these are fairly easily measured, it is by no means straightforward to compare the economic value of a large amount of poor milk with a smaller amount of rich milk.

The points awarded in the Milking Trials at the London Dairy Show have undoubtedly been prepared on a well considered basis, and in this article it is proposed to accept these points as a sound method of stating the production value of a cow. The figure which is obtained by utilising this scale of points, has the great advantage of being a definite single value which needs no qualifying statement.

2. Breeds vary in size, and so the difficulty of comparing large and small animals from an economic point of view presents itself.

The difficulties in this connection have become more obvious since the introduction of the Bledisloe Trophy at the London Dairy Show, which is awarded each year to "the Best Dairy Breed."

Up to the present the method of awarding the trophy (1) can scarcely be considered satisfactory, and in the following pages a system for the comparison of breeds is suggested. The system undoubtedly has defects; it is believed, however, that they are small, especially when the method is compared with breed comparisons based on observation only, which as most people realise is seldom really free from bias in some form.

COMPARISON ON A MAINTENANCE RATION BASIS.

When the various factors constituting "Costs" in the production of milk are analysed, the outstanding factor is "Cost of food." This point is clearly stated by the Travelling Milk Commission (2), and is confirmed in numerous other publications.

With this point as a basis it becomes evident that to state the food requirements of different animals by a single figure would be helpful in obtaining a comparison.

The food requirements of a dairy cow are almost invariably considered as consisting of two distinct parts.

- (a) The Maintenance Ration—or that amount of food required to maintain the body without loss or gain in weight.
- (b) The Production Ration—which is generally stated at a fixed quantity per gallon of milk produced.

For the present "item (b)" may be disregarded, since in the absence of evidence to prove the contrary it may be taken that, on the average, all breeds require the same amount of food to produce a gallon of milk of constant quality, and the Milking Trial points, which have already been mentioned, take variations in quality into consideration.

While the maintenance requirements of a cow vary according to its condition, or degree of fatness, to its thickness and type of coat in some localities, and to the animal's powers of digestion, the main point which needs consideration is varying requirements according to size. In this connection the method of awarding the "National" Butter and Milk Challenge Cups at the London Dairy Show is of interest. These cups are awarded to the animals which produce the highest number of points in the Butter Tests, and the Milking Trials respectively, per 1,000 lbs. live weight.

If the object of these cups is to show the animal which is capable of the highest production per unit of food requirements it is open to the serious objection that the maintenance requirements of an animal do not vary in direct proportion to its live weight.

Rubner (3) experimenting on fasting dogs found that the amount of heat lost daily per square metre of body surface was practically constant in dogs of different sizes. Now, although the maintenance ration may not be entirely dependent on the amount of heat given off by an animal, it is generally accepted that the body surface is an excellent index to the maintenance ration required by an animal. The common method of stating a basal ration per 1,000 lbs.—live weight—works quite well so long as the weight of the cow is somewhere in the neighbourhood of 1,000 lbs., but to double the ration for a 2,000 lb. animal, or to halve it for a 500 lb. animal would be far from accurate.

USE OF LIVE WEIGHT AS A METHOD OF STATING MAINTENANCE REQUIREMENTS.

In the absence of an easy method of measuring the body surface of an animal, the geometrical law generally used in preparing "maintenance ration standards" for different sized cattle is "that the superficial area of solids vary in proportion to the squares of the cube roots of their weights."

Figure 1 gives an idea of how the curve based on this law behaves with weights between 500 and 1,200 lbs.

The factor for a 1,000 lb. animal will be seen to be 100, and for an animal weighing 512 lbs. the factor is 64 (each marked with a cross), so that a cow weighing 512 lbs. requires 64 per cent. as much food for maintenance as a cow weighing 1,000 lbs. *If live weight were the correct basis for rationing, the smaller cow would require only 51.2 per cent. of the ration of the larger cow.*

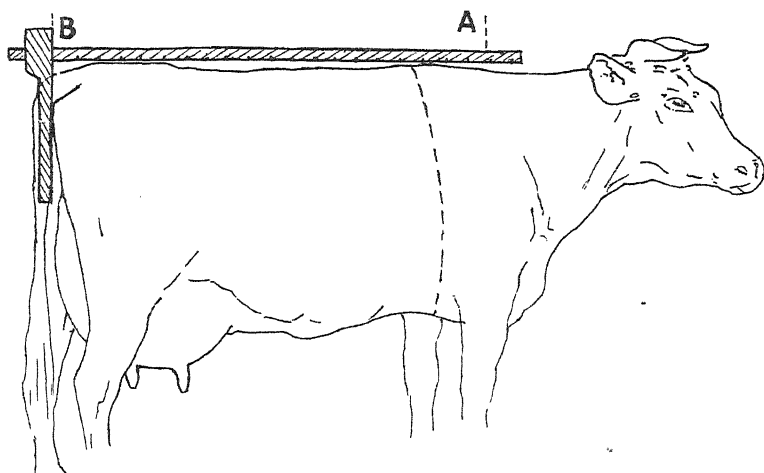
As the figure obtained by squaring the cube root of the live weight of an animal is mentioned freely in subsequent pages, it is in future referred to as the "Weighed Area" of an animal. Thus, if we consider an animal of 1,000 lbs. live weight, the cube root of 1,000 is 10, and the square of 10 is 100, so that the weighed area of a 1,000 lb. animal would be 100.

USE OF MEASUREMENTS.

While studying cattle measurements for another purpose it occurred to the writer that a figure giving proportional areas of animals might be obtained from them with reasonable accuracy.

The measurements selected as likely to give this figure were "length of back" from pin bones to shoulder, multiplied by heart girth, which, if the animal's body were a true cylinder, would give the area of its sides. The method of obtaining the necessary measurements are made more clear by the accompanying diagram. The instrument used to obtain the length of back is similar to those generally employed in measuring the height of horses or cattle. It is a "square" with the long arm graduated in inches.

The short arm of this square is placed firmly against one of the pin-bones and the long arm laid along the back bone.



The line A B constitutes length of back. The point A is decided by a mental line connecting the points of the shoulder blades most forward and nearest the back bone. These points can easily be found by placing the forefinger on one, and the thumb on the other. In fat cattle the shoulder blades are more difficult to feel, but with dairy animals no more definite point could be discovered.

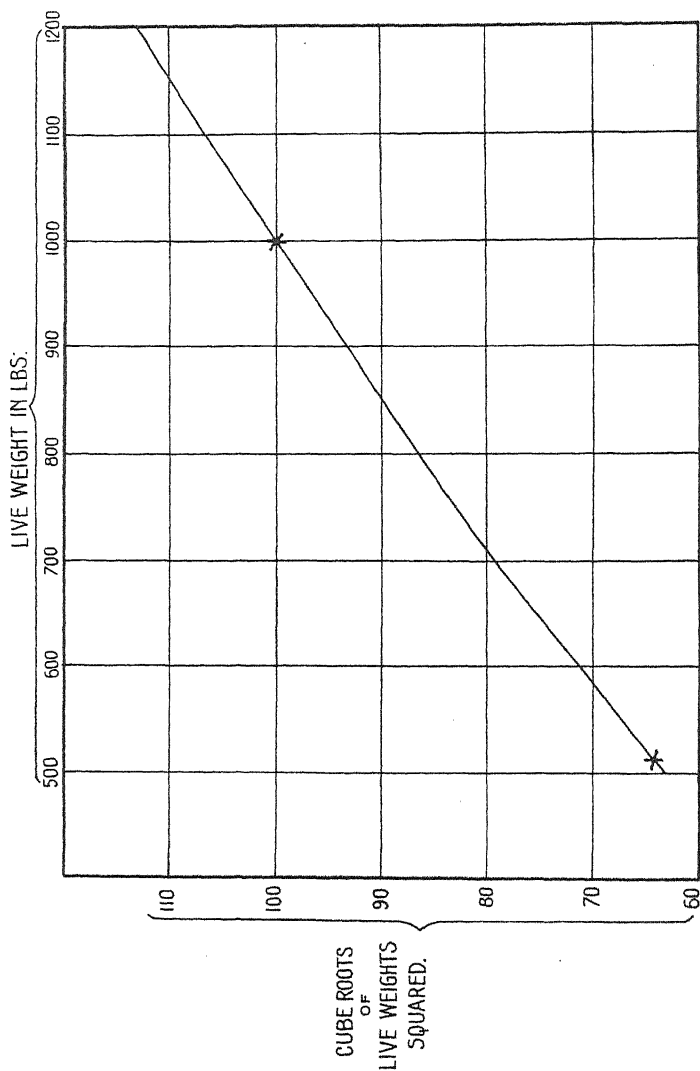
A preliminary trial with this method gave sufficiently encouraging results to consider its use seriously, and with a view to simplifying expressions the figure obtained by multiplying the length of an animal by the heart girth is in the remainder of this article termed the "Measured Area," and unless otherwise stated is worked out in square feet, *e.g.*, in one animal measured the live weight of which happened to be 994 lbs., the length of back was 55.6 inches, and the heart girth 68.5 inches. $55.6 \times 68.5 = 3,808$ square inches = 26.5 square feet, so that the "Measured Area" of this animal was 26.5.

Before proceeding any further it is desirable to make it quite clear that neither the figure called the "Weighed Area" nor that termed the "Measured Area" gives the actual area of the body surface of an animal, but the object in view is to show that both figures vary in direct proportion to the body surface and, therefore, vary in direct proportion to the maintenance requirements of the animal.

ACCURACY OF "WEIGHED AREA" AND "MEASURED AREA."

Weights.—By the use of a reliable weighbridge the live weight of an animal at a given time can be ascertained with accuracy, but the difficulty of obtaining a figure which can be called the true live weight of a cow arises from the fact that the weight varies considerably in

FIGURE I.
Showing two-thirds the "power" of Numbers between 500 & 1200.



the course of, say, 24 hours. A thirsty cow for example will drink anything up to 10 gallons (100 lbs.) of water in a few minutes and when the large quantities of food which are consumed daily, and the various forms of reduction of weight are considered, it is easily realised that under normal conditions a variation of 56 lbs. in a 10 cwt. cow is common and that under slightly abnormal conditions twice that variation is easily possible. The use of a single weight of a cow, therefore, taken under random conditions is not very reliable, and to obtain any degree of accuracy it is necessary to average the results obtained at several weighings taken at definite intervals or to weigh animals when fasted. If the collective weights of a group of cows is desired, an average figure obtained from weighing each animal once, might be reasonably accurate, and comparison with another group would be possible provided the groups were weighed under fairly uniform conditions of feeding and watering.

Measurements.—The two measurements, length of back and girth of heart, vary in cows chiefly according to the position in which the animal is standing, so that to obtain a true measurement it is not so necessary to consider whether the animal is fasted or well fed, but by moving the animal at intervals, a succession of measurements can be taken which on averaging are likely to give a reliable result. This point was clearly brought out in the following work:—In order to compare the relative reliability of the “Weighed Area” and the “Measured Area,” fifteen cows were weighed and measured on three successive days in April and again in June. In each case the operations were carried out between 2 and 3 p.m., the same cows being used on each occasion and the same order followed each day. The average results are given on Table I.

TABLE I.
Comparing the Variability of Weights and Measurements.
WEIGHTS.

Date.	No. of Animals.	Average Live Weight.	Weighed Area.	Coefficient of Variability. From 3 day averages.
		lbs.		
April 23	15	1,181	111·8	—
„ 24	15	1,175	111·3	—
„ 25	15	1,161	110·4	—
3 day average ...	—	1,172	111·2	·47
June 12	15	1,249	115·9	—
„ 13	15	1,255	116·2	—
„ 14	15	1,256	116·3	—
3 day average ...	—	1,253	116·1	·61

MEASUREMENTS.

Date.	No. of Animals.	Average Length of Back.	Average Heart Girth.	Measured Area.	Coefficient of Variability. From 3 day Averages.
		inches.	inches.		
April 27 ...	15	57.25	74.07	29.5	—
„ 24 ...	15	57.41	73.97	29.5	—
„ 25 ...	15	57.51	74.15	29.6	—
3 day average	—	57.39	74.06	29.5	.69
June 12 ...	15	57.0	75.20	29.8	—
„ 13 ...	15	56.8	75.1	29.7	—
„ 14 ...	15	56.9	75.2	29.8	—
3 day average	—	56.9	75.2	29.8	.74

NOTES ON TABLE I.

The Coefficient of Variability * is calculated from the Deviation which each variant shows from the mean of the three successive day variants and the figures given in the table are the average results from the fifteen cows. These figures should give a reasonably accurate indication of the comparative variabilities in this experiment.

It will be seen from the column headed “ Coefficient of Variability ” that “ Weight ” gives a slightly less variable result than “ measurements,” provided the animals are weighed under normal conditions and at the same time of the day ; but no conclusion can be drawn from this column as to which method gives the most accurate results, if weighing and measuring are carried out under random conditions.

The columns headed “ Weighed Area ” and “ Measured Area ” call for attention :—

The average “ Weighed Area ” increased from 111.2 in April to 116.1 in June (when the method of obtaining this figure is considered) ; this really means that the cows increased in live weight between April and June and the increase is probably due to three causes :—

1. Slight increase in the degree of fatness of the animals.
2. Most of the cows were in a more advanced stage of pregnancy and therefore heavier in June.
3. In April, under winter feeding conditions, the cows were fasted more at 2 p.m. than was the case in June, when they had just come from pasture, in other

$$* \text{ Coefficient of Variability} = 100 \frac{\sigma}{M}$$

Where σ = Standard Deviation.
M = The Mean.

words, the animal's stomachs contained more food and moisture at the time of weighing in June than they did in April.

Now the average "Measured Area" will be seen to be 29.5 in April and 29.8 in June, an almost negligible increase, indicating that measured area is less subject to variation caused by the three conditions just mentioned.

This conclusion may appear somewhat presumptive from the small amount of data given, but it is not an unexpected result and the idea actually originated from various disjointed data previously obtained, and is confirmed by this table.

CORRELATION BETWEEN "WEIGHED AREA" AND "MEASURED AREA."

An article on Measurements of Cattle, by Sir Robert P. Wright (4) is helpful in connection with correlation, although he deals with the subject from a more generalised point of view and with special reference to fat cattle.

The classification given by him emphasises two points:—

1. That weights and measurements do not bear the same relation to each other in animals which have marked differences in conformation and the three suggested classes of cattle include: in Class 1 "All the first class fattening Breeds"; in Class 3 "the rougher and less symmetrically formed Breeds"; and in Class 2 the Intermediate Breeds, such as Red Polls, Longhorns and Ayrshires." Apparently Class 2 may be considered to include all the well known Dairy Breeds.
2. That an even more important point in the relation between weights and measurements is the condition or state of fatness. The figures quoted, however, are scarcely applicable in the present article, since Sir Robert deals with "Dead weight" and not Live weight, it being well known that the proportion of Live to Dead weight varies according to the degree of fatness of an animal.

In order to show the comparison between the proportional body areas obtained from Live weights and those obtained by measurements, Table 2 has been prepared from material chiefly obtained at the London Dairy Show. The Classes for Various Breeds are arranged in order of Live weight—see columns 4 and 5.

The animals included in the table were all measured and column 6 gives in square feet the result of multiplying the Average Length of

TABLE 2.
Showing Correlation between "Weighed Area" and "Measured Area" in different Breeds of Dairy Cattle.

1. Breed.	2. Description of Animals. Age and where Measured.	3. No. of Animals Averaged.	4. Average Live Weight.	5. Proportional Body Surface.		7. Measured Area stated as a Percentage of Weighed Area.
				Based on Weighed Area.	Based on Measured Area.	
Friesian	3 to 5 years, 1922 Dairy Show ...	3	lbs. 1,369	123.3	32.10	26.0
Shorthorn	3 to 5 years, 1922 Dairy Show ...	3	1,341	121.4	32.00	26.3
Friesian	Over 5 years, 1922 Dairy Show ...	3	1,317	119.9	32.00	26.7
Shorthorn	Over 5 years, 1922 Dairy Show ...	3	1,290	118.3	32.50	27.5
Friesian	Under 3 years, 1922 Dairy Show	3	1,251	116.2	30.00	25.8
Welsh Black	Any age, 1922 Dairy Show ...	3	1,212	113.7	30.60	26.9
Ayrshire	Cows, 1923 Dairy Show ...	5	1,133	108.8	28.50	26.2
Ayrshire	Heifers, 1923 Dairy Show ...	10	1,021	101.2	26.40	26.1
Ayrshire	Heifers, 1922 Dairy Show ...	3	953	96.8	25.80	26.7
Guernsey	Cows and Heifers, 1923 Dairy Show	9	908	93.8	25.70	27.4
Jersey	Cows, 1923 Dairy Show ...	6	833	88.5	23.20	26.2
Dexter	Heifers, 1923 Dairy Show ...	4	530	65.3	17.45	26.7

back by the average Heart Girth (*i.e.*, "Measured Area"). Column 7 is the measured area stated as a percentage of the "Weighed Area," so that the closer the figures given in this column correspond with each other the greater must be the correlation between the two methods of finding the proportional Body surface.

In view of the small number of animals averaged in most cases, the fact that neither weights nor measurements were taken in duplicate, and that the law on which the "Weighed Area" is based is dependent on all animals being in fat free condition, the correlation is extraordinarily good.

There is no indication in the Table that size of animals affects the proportional body surface found by either method, thus in column 7 a figure of 26.7 is found for a class of Friesians averaging 1,317 lbs. live weight, and also for Dexters Heifers averaging only 530 lbs.

The two classes which do not fall in line so well with the other breeds are Shorthorns (over 5 years, 1922 Show) and Guernseys (1923 Show), giving figures in column 7 of 27.5 and 27.4 respectively. The explanation is fairly simple; the Shorthorns included a prominently boned and rather coarse animal, and the Guernseys included several cows in considerably poorer condition than is usually seen at the London Dairy Show. In both these cases common sense tells one that the "Measured Area" which is higher in proportion is a more reliable statement of the actual body surface of those animals than the "Weighed Area."

The younger and more compact animals like Ayreshires and Jerseys are seen to give a lower proportional figure by measurements; as to whether this is due to a higher density of the animal or a comparatively small heart girth has not yet been studied, but in any case the variation is not very pronounced.

The conclusion which may be drawn from the above is that while proportional body surface may be obtained fairly accurately from accurate weights or accurate measurements, the latter is likely to give a figure nearer the truth when the animals vary in degree of fatness.

Now, a half fat animal requires a larger maintenance ration than a lean animal of the same size (not live weight) so that although "Weighed Area" may not represent the body surface as accurately as "Measured Area," the former may be a better indication of the maintenance requirements of the animal. On this point, however, no proof is attempted and on the whole there is probably very little to choose between the two methods from the point of view of reliability. The question of practicability will depend on equipment available for taking weights or measurements. Obviously where a weighbridge is not available, measurements can be utilised.

POSSIBLE OBJECTIONS.

The smaller-breed enthusiasts may raise objection to the foregoing by stating that some authorities suggest that the Maintenance Protein requirements of an animal vary in proportion to the live weight rather than the body surface; this may be correct, but it is by no means accepted by all authorities. On the other hand, supporters of the larger breeds will probably say that the comparative labour bill of large and small animals does not coincide with the proportional body surface. If it did so, then if one man was required to look after twelve animals averaging 1,000 lbs. each, the same man should be able to look after nearly 19 cows of 512 lbs. average live weight. Probably there is something to be said for both these points, but as they pull in opposite directions, there is of necessity a balancing effect.

PRACTICAL APPLICATION OF MEASUREMENTS.

Three uses present themselves for the figure under discussion which has been called the "Measured Area."

1. When seeking scientific advice as regards the feeding of dairy cows, farmers and cowkeepers should state the average size of their animals. The usual method of stating the size is in estimated live weight, and needless to say the estimate may be very wide of the mark.

If, instead of stating size as live weight, the "average length of back" and "heart girth" were measured with a tape, a really reliable figure could be given, and there appears to be no reason why Maintenance Ration standards should not be stated per square foot of "Measured Area," thus discarding the usual sliding scale which is at present often employed for animals of various sizes.

2. At some country Shows, Milking Trials are held in which all breeds compete in open competition, so that the smaller breeds are seriously handicapped. If the Milking Trial points were divided by the "Measured Area" and prizes awarded on the highest figure so obtained, all animals would be on a more level footing as regards economy of production.

3. Either "Measured Area" or "Weighed Area" might be employed at the London Dairy Show in the award of the Bledisloe Trophy. A possible method would be to take the best group of, say, four or six animals from each breed, average the points awarded in the Milking Trials and divide this figure by either the "Weighed Area" or the "Measured Area." The

TABLE 3.
Showing Breed Comparison by the use of "Weighed Area."

No. of Class in 1922 B.D.F.A. Catalogue.	Breed.	Age of Animals.	No. of Animals Averaged.	Average Live Weight.	Weighed Area.	Average Points Gained by Class in Milking Trials.	Points Gained per Unit of Weighed Area.
25	Friesians ...	Over 5 years	14	et. qrs. lbs.	124.9	120.2	.963
6	Lincoln Reds	Cows	8	12 1 20	119.0	113.2	.952
19	Ayrshires ...	Cows	13	11 2 10	105.4	95.7	.907
4	N. P. Shorthorns...	Cows	11	9 2 17	119.3	108.1	.906
8	Jerseys ...	Cows	24	11 2 14	88.5	79.7	.901
11	Guernseys	Over 5 years	6	7 1 20	98.7	88.4	.896
1	P. Shorthorns	Over 5 years	20	8 2 26	124.2	107.7	.867
17	Devons ...	Any age	7	12 1 8	114.7	98.7	.861
14	Red Polls	Over 5 years	14	10 3 25	111.6	91.5	.821
21	Kerries ...	Cows	8	10 2 1	92.9	75.3	.810
18	South Devons	Any age	5	7 3 25	131.8	100.5	.762
28	Welsh Blacks	Any age	5	13 2 6	114.3	83.7	.732
23	Dexters ...	Cows	4	10 3 18	84.7	59.7	.705

group of animals yielding the highest dividend should be the breed which is capable of yielding the highest production value per unit of food necessary for maintenance.

As an example of how Breed Comparison can be arrived at from Live Weight by the method put forward, Table 3 has been prepared (5) and a few notes on it may be desirable. In this table the breeds are set out in order of merit as shown in column 8, which is worked out by the method mentioned above from Milking Trial points and "Weighed Area."

The two outstanding breeds are British Friesian and Lincoln Reds; the latter, however, may be handicapped by the inclusion of some younger animals, there being no class for cows three to five years old. The position in the table of these two breeds is well merited, for in the 1922 Show the British Friesians won many of the open cups and the Lincoln Reds won the Bledisloe Trophy.

The similarity between the points obtained by the breeds occupying the third to the sixth positions on the list indicate that the method of comparison does not specially favour large or small animals.

It is not suggested that the foregoing is in any way exhaustive, but if it gives a better method of comparing the economic productive powers of large and small animals than has previously been forthcoming, nothing more need be said at this stage. If the principle is sound, the subject is likely to be sufficiently important to overcome the possible objection to its application at Shows on account of the amount of work involved. In any case the measurement of our best animals seems desirable if only to obtain accurate records of size for future reference.

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 3. Ztschr—Biol., 19, 1883, p. 535.
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THE WORLD'S DAIRY CONGRESS.

Notes and Impressions.

By J. GILLARD STAPLETON.

The British Delegates leaving England on the "Celtic," September 22nd, were :—

Dr. Stenhouse Williams, M.D., D.Sc.
 Dr. J. B. Orr, D.S.O., M.C., M.D., D.Sc.
 Dr. Gerald Leighton, O.B.E., M.D., D.Sc.
 Dr. J. C. Simpson, D.Sc.
 Mr. J. F. Blackshaw, Ministry of Agriculture.
 Mr. V. E. Wilkins, Ministry of Agriculture.
 Lt.-Col. Edwards, British Friesian Society.
 Mr. E. W. Langford, National Farmers' Union.
 Mr. C. W. Warth, National Federation of Dairymen's Associations.
 Captain Golding, D.S.O., D.Sc., Reading University College.
 Mr. George Dallas, Workers' Union.
 Mr. Manod Owen, Abergele.
 Mr. J. F. Phillips, United Dairies, Ltd.
 Mr. W. G. Lane, United Dairies, Ltd.
 Mr. G. F. Gosney, National Association of Creamery Proprietors.
 Miss Saker, Somerset County Council.
 Mr. Alec Steel, Central Association of Dairy Farmers.
 Mr. J. Gillard Stapleton, The British Dairy Farmers' Association.
 Miss B. K. Stapleton, } Visitors.
 Miss W. J. Stapleton, }

Dr. Hamel, Ministry of Health, Major Buxton, his nephew Mr. Edwards, and Lord and Lady Cranworth and others had arrived in America when our party landed.

The "Celtic" should have arrived at New York on October 1st, but owing to emigration difficulties there was a delay of one day, which necessitated our landing at Boston, and the civic reception by Governor Smith, of New York, had to be abandoned. We were received instead by members of the Boston Dairy Trade Association, who took us in hand, relieving us of all trouble at the docks and elsewhere.

We proceeded to the City Club, where the Dairymen's Association entertained us at lunch. After lunch, motor cars were provided and we were taken out to the chief bottling department of the largest milk distributing and ice cream manufacturing firm in Boston—Messrs. H. P. Hood & Sons.

A large number of dairy and ice cream Plants were inspected during our stay in America, and I propose to make a general survey of some of these and the variation in the methods adopted at different Plants later on, giving reports on a few visited only.

The following cities and towns were visited during our stay from October 2nd to November 3rd: Boston, Washington, Philadelphia, Syracuse, Auburn, Geneva, Watkins, Ithaca, Frumville, Buffalo, Niagara, Hamilton, Toronto, Detroit, Chicago, New Haven, New York; and as the reading of papers at Washington (D.C.), Philadelphia (Pa.), and Syracuse (N.Y.), occupied most of the time from October 2nd to October 10th, inclusive, it will be appreciated this hustle we were up against.

The opening session on October 2nd was a most impressive ceremony and was performed by Dr. Van Norman, supported by Mr. Hoover and two other Senators of the American Government—Charles Evan Hughes, Secretary of State, and Henry C. Wallace, Secretary of United States Department of Agriculture.

At the banquet in the evening at the New Willard Hotel, forty-three nations of the world were represented, and this great banquet, together with the whole proceedings of the day, raised the dairying industry in the minds of all present to a position amongst the industries of the world, second to none in importance, and one which deserved the support of the educated classes of all nations.

During the Congress and throughout my stay in America I was greatly impressed by the way the educated classes interest themselves in this problem of dairying in all its sections, with a determination which proves the importance they attach to it and their determination to improve and advance it for the general welfare of their people.

Mr. J. A. RUDDICK, Dairy and Cold Storage Commissioner, Canada, in reading his paper, No. 7, made it quite clear that England is the largest buyer of dairy products, both butter and cheese, and, in consequence, the English Producers may anticipate that Producers from all parts of the world will make greater efforts in the future to secure a share of our trade than ever before.

New Zealand is rapidly going ahead and expects to double her present output in ten years' time.

The absence of Germany as a buyer of butter at the present time is about counter-balanced by the collapse of Russia as a seller.

Following on Mr. Ruddick's examination of the position, it is evident that producers in England must not only produce more milk, but also they must support every effort made by their organizers and others to increase the demand for liquid milk.

Dr. J. R. MOHLER (Chief, Bureau of Animal Industry, U.S. Dept. of Agriculture) :

Dr. Mohler made allusion to several important facts, and those that impressed me most were that America has the largest cow population of all nations, having one-fourth the world's cows, but only one-sixteenth of the world's population, and yet she has no surplus dairy products to export. The reason for this is the large consumption by her own people.

America is practically free from disease, so far as her cow population is concerned, and has to a very large extent freed her herds from tuberculosis.

I presume that if Dr. Mohler's statements are correct with regard to tuberculosis, the explanation is to be found, in the first place, to climatic conditions, and also to the fact that in many of the States the cows are out all the year round.

Dr. Mohler also pointed out that the risk of spreading disease is greatly increased by market contamination by contact. He also suggested that all nations should agree to enforce fundamental conditions to prevent the spread of disease.

An International Bureau of Information *re* Diseases and Treatment should be the first step in any such combined action, and the United States is willing to join in any scheme and also in enforcing any agreed regulations relating to importation and exportation.

The tuberculin test is required by the U.S. to be applied to all animals exported, and a livestock police organization should be set up in all countries.

VISIT TO THE ONONDAGA CO-OPERATIVE DAIRY (Dairymen's League Co-op. Producers' Association) :

This society pays its members on a fat content basis and retails its own members' milk in glass bottles, and has a large trade in chocolate milk. They are also manufacturers of condensed milk in bulk for ice cream manufacture, butter, skim milk cheese (College cheese); the latter is sold at half the price of full-cream cheese.

VISIT TO THE WA WA DAIRY (CERTIFIED MILK) FARM :

The farm is about 1,400 acres, 650 of which is arable land, 600 alfalfa, and the rest grass.

The Indian corn silage produced and consumed annually is about 1,800 tons.

There are about 500 Guernsey cows on the farm, including milkers and dry cows, and they breed all their own cows, only the bulls being purchased.

Most of the cows on the farm are dehorned, but only about 150 are registered pedigree cows, the remainder being grade cows.

The herd is milked three times daily.

Dr. L. B. MINDEL'S PAPER (Professor of Physiological Chemistry, Yale University):

Dr. Mindel laid stress on the fact that there are beneficial bacteria in milk, and this fact must not be lost sight of; also that sour milk in some cases of stomach trouble is beneficial.

Adding milk to cereals greatly adds to their food value.

We were also informed that all vitamins are not destroyed by low temperature methods of spray drying of milk.

Dr. H. C. SHERMAN'S PAPER (Professor of Food Chemistry, Columbia University):

In this paper we were told that children from 3 to 13 years should have one quart of milk daily, even if fruit and vegetables are also supplied.

The quart daily should be continued till full growth has been obtained.

Dr. R. J. BLACKHAM'S PAPER (British Army Medical Service):

Milk in India often contains more bacteria per c.c. than ordinary sewage, and if only for this reason, dried milk is the best solution for milk supplies in the tropics, and where dried milk has been used in other countries, no case of rickets or scurvy has ever been traced to its use.

Bankers in America look upon the Dairy Farmer as the soundest agriculturist, owing to the quick returns on his produce.

Labour on American farms is short, due to emigration restrictions.

The Government acts as a sort of fairy godmother to the producers at the present time, giving them protection in every possible way and to an extent never dreamt of in England. The buyers have to make a Bond Deposit with the Government against purchases from farmers.

The distribution drivers are given instruction in salesmanship, and they are expected to become salesmen and not purely deliverers of milk.

I had an interesting interview with a milk carrier, who drove me in his *own* car to one of the farms visited.

I gathered that the American milk distributing firms have their troubles almost similar in every respect to our own, so far as the public is concerned.

ADDRESS BY MISS SALLY LUCAS JEAN (American Child Health Association, New York):

Miss Jean gave a most interesting and instructive address, pointing out that all questions relating to milk were of such vital importance

to the nation that it was necessary that the educated classes of the community should give the problems relating to milk production, milk distribution, and especially milk consumption their whole-hearted support and study.

The teaching of the value of milk as a food could best be brought into the homes of the masses through the schools, welfare centres, and similar sources.

Fifty per cent. of the public money spent on educating young children would be wasted if the children were underfed or wrongly fed, and it is a national economy to see that the children are in a fit condition, bodily and mentally, to make the most of the educational opportunities provided for them.

The Dairymen's League Co-operative (Producers) Association, Inc., is a non-stock, non-profit corporation, engaged in the collective marketing of milk and milk products. It has an organization of over 65,000 farmers owning over 800,000 cows.

Its producing territory embraces the New York City milk shed of New York State, and adjoining sections of Pennsylvania, New Jersey, Connecticut, Massachusetts, and Vermont.

Its outlets for milk comprise New York City, the biggest and best fluid market in the world, as well as the principal domestic and foreign markets for milk products.

The Association was incorporated on March 26th, 1919, under Article 13A of the Membership Corporations Law of the State of New York. It was formed within the ranks of the old Dairymen's League, Inc., a selling agency, which had demonstrated that organization was powerful at times in obtaining better prices for milk producers, but helpless in improving marketing conditions, as long as the marketing machinery was controlled by disinterested parties.

The Association functioned in a modest way until after the World War, when exports of milk products stopped, depriving thousands of farmers of their customary markets. On May 1st, 1921, the Co-operative took its place in the commercial world as a farmers' business organization by inaugurating a pooling plan which guaranteed the sale of *all the milk of all its members* through the operation of farmer-owned Plants.

The Association started business with practically no capital other than the milk delivered by its members. To-day it is operating 126 country milk plants, of which 93 are owned by the Association, and the remaining 33 are leased. More than half of the members deliver to milk dealers' Plants and are protected from any losses or failures by pooling with all those who deliver to Association Plants.

During the last fiscal year ending March 31st, 1923, the total sales of the Association aggregated \$81,870,984-88. Its total assets, including \$2,841,036-86 in bank, amounted to \$18,901,317-66. This record of accomplishments has amazed the financial and commercial

world and speaks volumes for the soundness and breadth of the Association's programme.

The existence of farmer-owned Plants, operated by experts in the employ of the Association, means that there can be no artificial interference with nor actual closing down of the Plants as long as the farmers have milk to sell. It means that surplus milk will be manufactured into the more advantageous forms of milk products and will not be shipped to the cities as in former days, to force down to the producers the price of fluid milk, with no benefit to the consumer. It means that the milk markets will be stabilised and better prices assured to the farmer. A stabilised market guarantees to the great consuming public an adequate supply of fluid milk for the future.

The Association returns to its members all the proceeds from the sale of milk less expenses for administration and operation, and deductions for new plants and working capital. Each member receives the same base price per 100 pounds of milk, with differentials for freight, butter, fat, and quality, through 12 monthly milk cheques. Whatever is left as a residue of the year's business goes to the members in a "13th cheque."

The loans made the Association by the members to finance its operations have ranged from 10c. to 20c. per 100 pounds a month. The farmers receive as security for their loans, certificates of indebtedness that are payable in five years, with interest payable annually. The deductions have amounted thus far to from \$4,000,000 to \$5,000,000 a year.

The members are formed into 955 local co-operative associations. They are the backbone of the central organization and through the local, each member has full opportunity of formulating and carrying out co-operatively the Association's programme. The 24 Directors are elected directly by the members, through the locals.

What has the Co-operative Association done for its members ?

It has found markets for every drop of milk the member has offered for sale every day in the year.

It has paid in recent months a pool price that has exceeded the price for the corresponding months of the preceding year.

It is striving to eliminate all unnecessary costs of handling, manufacturing and distributing, and expects by economic and efficient operation to return to the producer a larger share of every dollar paid by the consumer for milk and milk products.

Under the financial programme, strict provision is being made to retire the certificates of indebtedness at maturity.

The members are the Association, and own its Plants, its business, its goodwill, and there are no other owners.

What is the Association doing for the consumer ?

It believes that the success of a Producer-Consumer service can be realized only by giving the public quality products. Thus, it is

marketing high quality fluid milk, the finest ice cream, the best evaporated milk. It will enable the consumer to buy milk at the lowest possible price consistent with quality and service.

The financial plan of the Association was recommended by the Federal Department of Agriculture, and its methods of handling the farmers' business have received the approval of experts in the financial world.

The business methods are the methods of enterprising, wideawake, and up-to-date business men, doing business in a big way. The Association develops markets for milk and milk products by advertising and then sending highly trained salesmen to round up the customers.

The consuming public is fast realising that the dairy farmer too long has been receiving an inadequate return for his investment and labour, and is in sympathy with his efforts to carry out a programme for the benefit of producer and consumer alike.

Because the organization is founded on economic justice to producers and consumers of milk it is a foregone conclusion that its success will be assured, and the most important of all the country's resources, the milk supply, will be protected and developed for all the people.

The Dairymen's League pay on the bacteria count basis 0.45 cents per 100 lbs. of milk, with a count under 10,000 between 10,000 and 25,000 0.40, and above this nothing, and the limit for Grade "A" milk is 100,000. There is also a "Fat" Bonus of 0.4 cents per 100 lbs. of milk for each 1 per cent. over 3 per cent. of Fat.

VISIT TO MR. H. E. BABCOCK'S INLET VALLEY FARM.

This is a Grade "A" farm, using a Lawrence Kennedy milking machine.

The tuberculin test when first applied gave 18 reactors out of 28, and this was cleaned up in five years, and since 1905 there have been no reactors, with three exceptions, but no trace of the disease could be found in these three cases.

The rubber connectors of the milking machine are cleaned with a solution of brine and hypochlorate.

The cows are turned out for four hours a day all the winter.

The milking quality of the herd can be gauged from the figures given in table on next page.

BABCOCK & MILLARD, INLET VALLEY FARMS, ITHACA, N.Y.

Name and Number.	Class.	Days.	Months.	Month lbs. Milk.	Credit.		Total lbs. Milk.	Credit lbs. B.F.
					% Fat.	lbs. B.F.		
Elm Rd. Lady Rihma 65584 	A	290	July	1321.5	4.528	59.84	16189.2	694.20
Elm Rd. Lady Rihma 65584 	A	321	August	1168.8	4.814	56.17	17356.0	750.37
Lady Mary of Sunny Gables 101475 	D	232	July	1175.0	4.601	54.06	11167.9	503.54
Lady Mary of Sunny Gables 101475 	D	263	August	1086.8	5.290	57.50	12254.7	561.04
King Bell's Baldeen 71109 	A	241	July	1604.4	4.105	67.31	14545.4	597.69
King Bell's Baldeen 71109 	A	272	August	1453.4	4.126	59.95	15998.8	657.66
Golden Princess of Sunny Gables 102966 	E	204	July	1312.5	4.557	59.81	9986.1	431.92
Golden Princess of Sunny Gables 102966 	E	235	August	1297.5	4.749	61.68	11283.6	493.54
Flossie Lehigh 36563 	A	158	July	1242.4	4.793	59.54	7935.2	346.75
Flossie Lehigh 36563 	A	189	August	1309.3	4.746	62.14	9244.5	408.89
Margaret Black 49157 	A	151	July	1198.6	5.638	67.58	7368.0	369.46
Margaret Black 49157 	A	182	August	1195.4	5.55	66.35	8563.4	435.81
Chlo of Lick Brook 79222 	C	151	July	1359.5	4.528	61.56	7563.8	294.28
Chlo of Lick Brook 79222 	C	182	August	1267.3	3.505	54.70	8830.1	348.98
Christine of Lick Brook 77261 	A	92	July	1348.2	4.930	66.47	4250.6	187.27
Christine of Lick Brook 77261 	A	123	August	1347.3	4.720	63.60	5597.9	250.87
Carmancata of Larchmont 97360 	B	95	July	1620.5	4.772	75.69	5097.3	230.37
Carmancata of Larchmont 97360 	B	126	August	1563.6	4.831	75.08	6660.9	305.45
Princess Rosandale 92713 	C	23	July	1166.0	4.379	51.06	—	—
Princess Rosandale 92713 	C	54	August	1530.7	4.186	65.61	2696.7	116.67
Lady Glen Wood of Sunny Gables 101470 	D	98	July	1069.6	5.297	56.66	3630.0	179.55

The Company carry out all their own bacteriological tests.

The trade in Certified Milk is about 5,000 quarts per day, all of which they produce themselves at their Mount Clemens Farm, a short distance from Detroit.

The butter-making capacity of this Company is 15,000 lbs. daily, made in dual butter churns of 1,000 lbs. capacity each.

The cream for butter equipment is particularly noticeable in that it has 400 gallon coil vats made by The Creamery Package Company, and these vats act as pasteurisers and holders, being controlled by registering thermometers and hand-operated valves. These vats are used for ripening the cream, which is pre-heated to 142° aerated over open type cooler, and then raised and held at 190°, and then cooled to 48° for two hours before churning.

The milk trade of the Detroit Creamery for retail sales is about 40,000 gallons (128 ozs.) per day.

The milk sold as Jersey milk is not milk from Jersey cows, but is milk enriched by the addition of cream to show four per cent. of fat.

The output of ice cream from this Creamery Company is about 20,000 gallons daily at the height of the season, but drops down to about 4,000 or less.

The coolers used are of the outside surface cooling type.

The full cans of milk are conveyed to the top of a high building by an endless conveyor and tested, as opened, by an experienced operator, by smell. The emptied cans are washed, sterilised, and dried as they go down to the bottom again. The lids are separately washed by gravity conveyors and are sealed before being sent up to the farms.

The milk emptied from the cans is stored in large glass-lined tanks which are jacketted with cold brine in circulation, but the milk is not cooled before entering these tanks.

The glass bottles were originally washed by Rice Adams jet machines, but the Meyer bottle-washer is now installed, which soaks and brushes the bottles as well as jet washing them, and gives automatic delivery of the finished bottles on to conveyor bands which convey them to the fillers. The bottles as they pass from the machine travel before a very strong light and quite a considerable number are rejected during the day as they pass this light.

The milk is preheated by regenerator heaters to 110° and run through filters, not clarifiers, before passing to the pasteurisers, which consist of the Burrell Coil Type, the milk passing through internal tubes of small diameter, and is raised to 144° before passing to the continuous flow.

BURRELL SIMPLEX (Little Falls, New York).

Tube Retarder, the tubes being 5½ inches diameter, which provides that they shall be easily cleaned and inspected. The milk takes 35 minutes to pass through this retarder, which is worked on the vacuum principle. The temperature is maintained at 145° by steam

coils at the bottom of the holder, which do not come in contact with the milk tubes.

The milk now passes through a regenerative type of cooler, but milk from retarder passing through the coils, while the cold milk from farmers' cans passes on the outside on its way to the filters.

After the retarded milk has in this way been reduced to 90°, it is passed through a similar cooler, but in this case the cooling is done by direct expansion.

The floors of the buildings are made of iron grids filled with cement.

The average takings on each retail van is £78 per week.

Wholesale deliveries are made to stores or grocery shops in bottles, and these sell them over the counter or in some cases deliver, but their spread or trading margin is only 2 cents per quart, and all bottles have to be paid for. Bad milk is changed for these stores, but not milk held over.

The wholesale vans average about £120 daily.

The deliveries start at 12 o'clock midnight, and nearly all the milk is delivered before breakfast during the summer period.

From November 1st and after, the deliveries are made during the day.

THE BORDENS PLANT at Chicago is equipped with glass-lined storage tanks, Davis Watkins fillers and Creamery Package enamel-lined positive holders with seven-way valves.

Regenerative heater principle is used with pre-heaters and centrifugal cleaners, and at no stage of the operation is the milk exposed to the air.

The regenerative tube heaters raise the milk to 85°, and the milk then passes to clarifiers (centrifugal), and is then raised to 120°, being finally raised to 145° in "Progress" heater.

The regenerative heaters used are the Wisner type, 230, Greenwich Street, New York. This plant handles 12,000 gallons per day, and the bottle-washers used are the Yundt Washer (Milwaukee), the bottles being automatically passed from the washer to the filler.

The building is only about 60 feet by 40 feet, and the smallest seen for the quantity of milk handled.

The charge per pint is 8 cents and quarts 14 cents, 90 per cent of the trade being in quarts.

The bottle cases are separately washed.

As the bottles pass from the washer they pass before powerful lights and a certain percentage have to be picked out.

Caustic soda is used in the Yundt machine, and the machine raises the bottles to 175° at the highest point.

The temperatures are 130, 175, and 110, and this appears to be a very efficient bottle-washing equipment, but would be improved if the final washing jets were supplied with sterilised water.

The tube pasteuriser is the Rogers barrel heater, Dairy Machining and Construction Co., Derby, Connecticut.

Counts for bacteria are not taken at this depot.

There are rubber joints on the pre-heaters and the inside tubes come right out.

The milk bottles come straight off the fillers on to large wagons and are transported to town depots where they are stored in cold rooms ready for delivery.

There are 66 men working this depot six days a week, with one day off in each week.

The can washer is an excellent one, and is made by Lathrup Paulson Co., Chicago.

THE DETROIT CREAMERY Co. Certified Milk Farm is probably the largest and best in the country.

The Detroit Creamery Farm has now been running for nine years.

The milk is dealt with very rapidly and is in the bottles, capped, sealed, and finished half-an-hour after each cow is milked.

Cooling is done with water and cold brine and sent out packed with ice at 6.30 each morning—both milkings together.

The selling price is 25 cents against 14 cents for the ordinary milk.

The milking pails are the hooded uncovered type.

Each cowman has 13 cows to milk and clean.

The Holstein milk is sold as Holstein Baby Certified Milk, 3-4 per cent. fat.

The Guernsey, Jersey and Holstein mixed is sold as Walker Gordon Milk, 4 per cent. fat.

The water is supplied to the cattle in straight through cement mangers from which they are also fed.

All the cows are dehorned.

Cows are bought in and also raised on the farm, but the bought cows are twice tested before being brought into the herd with an interval of 60 days.

Out of 50 recent purchases, there were only three reactors.

Out of 800 cows there were only eight rejected on last test.

The cow barns are all painted internally with white enamel paint.

The bacterial counts range between 2,000 and 6,000.

An internal coil cooler is used and a cold storage room provided, and the boxes are iced till delivered to the customers.

All the equipment is sterilised for three hours at 180°.

The balanced ration of concentrates is fed to the cows at the rate of 1 lb. for every 3 lbs. of milk produced.

Seventy men are employed on the farm and they are all single men.

There are 800 cows on the farm.

2,300 acres of land, 1,800 of this under the plough.

The milking cows are stall-fed all the year round on the soiling principle, and are only turned out for exercise.

The land work is done by tractors, horses only being used for wagon carting work.

THE DETROIT CREAMERY CO. Distributing Depots run about 45 vans from each and 8 wholesale vans.

The feeding lorries carry about 336 cases of bottles.

The men have one day off in seven.

Average per retail van—320 quarts, and there are about 40 vans to each depot.

A cold room is provided for storage purposes.

THE SHEFFIELD FARMS, LTD.

Sheffield Farms owns and operates 80 country milk receiving plants and seven country bottling plants, and owns and operates seven modern city pasteurising plants and 22 city distributing plants; also operating 1,700 retail milk distributing routes in Greater New York and vicinity, together with 50 wholesale routes, and operates 250 retail grocery stores in Greater New York and vicinity, and serves 700 Great Atlantic and Pacific Tea Company Stores.

In order to maintain Sheffield service at all times, Sheffield Farms Company employees number 1,000 in the country districts and 4,500 in Greater New York and vicinity, a total of 5,500 employees; 2,100 horses are used in the business and 150 automobile trucks are operated.

Sheffield Farms ships into New York City daily in the neighbourhood of 15,000 cans of raw milk. The average freight zone, or haul, from country receiving station to city railroad terminal is 200-210 miles, and the average freight rate per 40-quart can is 45½ cents.

The average daily sales are 500,000 quarts sold in bottles, and 150,000 quarts sold in 40-quart cans loose.

In June, 1923, Sheffield Farms purchased approximately 63,000,000 pounds of milk. The average test of this milk was 3·7 per cent. The following prices were paid the producers for 3 per cent. milk for four months of 1923:—

June, \$2·115; July, \$2·20; August, \$2·20 (first half); August, \$2·55 (second half); September, \$2·75 and 4 cents per hundred pounds bonus for each one-tenth of 1 per cent. additional butterfat.

Sheffield Farms owns and operates one experimental farm, comprising about 700 acres, and four certified milk farms, comprising a total of about 1,900 acres. These farms are stocked with high grade tuberculin tested cattle. There are about 1,400 on the farms.

Sheffield Farms employs its own Veterinarians and Inspectors in the country districts, and maintains its own staff of chemists in its own laboratories in both country and city, and manufactures almost all of the machinery and equipment it uses. It is a large purchaser

of milk bottles, many car-loads a year. It is interesting to note that the average life of a milk bottle is 14 to 15 trips.

Sheffield Farms is constantly carrying on an educational campaign in the interests of the milk industry, using such mediums as newspaper and periodical advertising, moving pictures, &c.

Sheffield Farms has two organisations of employees. One is the Mutual Benefit Association, a fraternal and benefit organisation with a fine record of achievement. The other is the Sheffield Co-operative Council, an organisation which deals directly with the Personnel Department and the executives of the company in the matter of wages, working conditions, &c. The Sheffield Farms Life Insurance Plan, whereby all employees of the Company are covered by life insurance, the premiums being paid by the Company, is another activity that has been found immensely satisfactory to the employees.

Four of the farms are certified milk farms. The fifth is an experimental farm. All of these farms, comprising a total of about 2,600 acres and stocked with approximately 1,400 cows are under high state of cultivation. The herds are tuberculin tested and are kept in the stables and exercising yards the year round. Hay, ensilage, alfalfa, and other fodder for the cattle is produced on the farms. Each farm is a community unit in itself, there being the farmhouse and office for the manager, houses for employees, creamery, hay and grain barns, sanitary stables, &c.

Preparations are being made to demonstrate on one of the Company's farms the practical utility and commercial value of a wonderful new invention in the shape of a hay drier. Exhaustive records will be kept of the operation of this new invention, including labour-saving, operating and other costs; also the feeding value of the crops dried by the new method, as compared with sun-dried crops. It is claimed for the new invention that crops dried by it retain practically all of the protein, thereby enhancing their food value.

The dairymen who produce milk for Sheffield Farms have their own organisation. It is known as the Sheffield Farm Producers' Association, and its membership is made up exclusively of farmers who produce milk for Sheffield Farms. It makes prices and arranges trade relations independent of any other group of dairymen. Representatives of the Association meet monthly with the Executives of Sheffield Farms Company to discuss market conditions, trade relations and agree upon prices. The representatives of the Association are chosen monthly at group meetings.

Since April, 1922, Sheffield Farms producers have received every month for their milk the highest price possible consistent with market conditions. The price record, which speaks for itself, is shown below.

During the twelve months of the second year's operation of the Dairymen's League Co-operative Association "Pool"—April, 1922, to March, 1923, inclusive—the average cash price paid by the Sheffield Farms Company to Sheffield Producers for three per cent. milk in the basic zone, was \$-5925 more than the average cash price paid by

the Dairymen's League Co-operative Association to its "Pool" members. Below is a table showing the cash price paid each month by Sheffield Farms and by the pooling organisation; also the difference each month between the two prices, which difference is in every month favourable to Sheffield Producers:—

Month.						Sheffield Cash Price.	Pool Cash Price.	Difference.
1922.						\$	\$	\$
April	...	...	...	...	...	1.750	1.235	0.5150
May	...	...	...	...	...	1.700	1.200	0.5000
June	...	...	...	...	...	1.650	1.245	0.4050
July	...	...	...	...	...	2.100	1.420	0.6800
August	...	...	...	...	...	2.550	1.605	0.9450
September	...	...	...	...	...	2.550	1.850	0.7000
October	...	...	...	...	...	2.575	2.010	0.5650
November	...	...	...	...	...	2.725	2.265	0.4600
December	...	...	...	...	...	3.095	2.550	0.5450
1923.								
January	...	...	...	...	...	3.145	2.110	1.0350
February	...	...	...	...	...	2.500	2.210	0.2900
March	...	...	...	...	...	2.500	2.030	0.4700
Average for 12 months						\$2.403	\$1.810	\$0.5925

This is the third year of the "Pool's" operation, and for the four months, April, May, June, and July, 1923, the average cash price paid by the Sheffield Farms Company to Sheffield Producers for three per cent. milk in the basic zone, is \$406 more than the average cash price paid by the "Pool." Here are the figures:—

Month.						Sheffield Cash Price.	Pool Cash Price.	Difference.
1923.						\$	\$	\$
April	...	...	...	...	...	2.50	1.925	.575
May	...	...	...	...	...	2.11	1.720	.390
June	...	...	...	...	...	2.11	1.815	.295
July	...	...	...	...	...	2.20	1.835	.365
Average						\$2.23	\$1.824	\$.406

For August, Sheffield Farms paid for three per cent. milk \$2.20 cash per hundred pounds for the first half of the month, and \$2.55 cash for the second half.

For September, Sheffield Farms will pay \$2.75 cash per hundred pounds for 3 per cent. milk.

Sheffield Farms has for years been content with nothing short of absolute certainty that the milk it distributed to the people of New

York City was the last word in purity and wholesomeness. To insure absolute purity, highest quality, and efficient service, Sheffield Farms maintains its own staff of veterinarians, farm inspectors, chemists and milk laboratory experts. The Company has five laboratories, equipped with the most modern apparatus, where chemists stand guard daily over the Company's milk supply and distribution. Veterinarians and Inspectors, with a watchfulness born of knowledge and experience, look after the production end on hundreds of farms, as well as the handling of the supply in both country and city plants.

Through score cards, whereby the sanitary record of every dairy is known and watched, by tuberculin tests of cattle, by regulations regarding the cooling of the milk on the farms, the sediment tests for dirt, bacteriological tests, butterfat tests, lactometer tests, the strictest regulations regarding the handling of the milk at country plants and city plants, by pasteurisation, strictly sanitary bottling and capping of the bottles, proper cooling of the milk on delivery wagons, and by other modern methods, many of which have been developed by Sheffield Farms, is New York milk and cream protected. Complete farm inspection, complete laboratory control, complete and prompt delivery service are the means employed by Sheffield Farms to accomplish this.

The Sheffield Farms pasteurising plants are the simplest and most efficient seen in America, and were designed by Mr. Hewlings, now the Consulting Engineer to the United Dairies, Ltd.

The system is on the open type cooler plan and both the pasteurisers and the coolers are of the same design and pattern, the milk being raised to 145° F. in passing over the first open tubular apparatus flowing through to filters into the holding vats and from these vats over the tubular open coolers, which reduces the temperature to about 40° F.

The buildings are very lofty and the 10-gallon cans are carried when full to the top of the building by an endless conveyor, where they are emptied into the storage tanks, then washed immediately, sterilised, dried, sealed and returned down a lift to be reloaded on to the rail trucks. There is no pumping of milk and a minimum of pipe run and the air passing into the building is filtered and kept circulating.

All the men working in the milk room change their clothes before entering, and put on clean white overalls.

The heating and cooling of the milk is done on the positive plan, by means of water circulation, no brine or steam being used and the water in the pasteurising section never rises above 148° F., and in the cooling section below 36° F. The substitution of chilled water for brine permits of the cooling of this water by direct expansion, which is a very efficient and economical method.

Mr. Hewlings has designed a very ingenious and economical process of handling the water which works on the regenerative principle, the heat put into the water by the milk being conserved and added to till it finally passes out at the hottest point from whence it passes

over a series of open air coolers and back to the direct expansion section for recooling down to 36° F., so no water is wasted except by evaporation.

The whole of these operations are automatically controlled and checked by a central observation control board which is certainly a very clever contrivance and entirely novel so far as dairy equipment is concerned.

THE NEW HAVEN DAIRY COMPANY.

The 10-gallon cans on arrival are elevated to the top of the building by an endless conveyor landing them automatically on a gravity conveyor which conveys them to the weighing and tipping platforms, the empties again passing by gravity to the can washer and thence by lift to the ground floor again.

The milk passes to Creamery Package coil vats and is heated to 90° F. before passing through the centrifugal cleaners and thence to a coil pasteuriser which raises the milk from 90° to 110°, at which temperature it flows into the bottle filler.

The dirty bottles are removed from the crates and placed in cups attached to chain conveyors which take them through two caustic soda tanks and then through two clean water tanks.

Caustic Soda Temperatures, 110°, 135°;

Water Temperatures, 145°, 100°.

The bottles then carry on through a jet washing section—4 jets of water under pressure entering each bottle one after another.

From this section they pass to the filling platform automatically and are filled, then crown corked, all without handling. Then they are placed in the crates again by hand and put on another chain conveyor which passes them through another set of tanks, which raises them to 145°, "holds" them at 145° for 30 minutes, cools them with town water, and finally with water reduced to 40° by brine coils and then out on to a platform and through a small door into the cold room, and here they are maintained at 45° till loaded on the vans.

There are practically no milk pipes in this equipment to keep clean, as the first short run is accomplished with only a few feet of pipes, and as the pasteurising and cooling is done under the crown cork, contamination of the milk is impossible, and this cannot be said of any equipment seen throughout the many plants visited in America and Canada.

The twelve months' bacterial counts for the year 1922 show a curve that no period of the year exceeded 12,000, and a large number of very low counts were recorded.

The records disclose that the keeping qualities of the milk thus treated are most remarkable.

The output is 3,000 quarts per hour.

Sales—15,000 quarts daily, 3,000 Imperial gallons.

Length of Pasteuriser—22 feet.

Width " 10 "

Height " 18 "

Van loads average 300 quarts.

The bottles are filled *hot* to top and in cooling a space of about $\frac{1}{4}$ inch is left in bottles.

The washing section is 17 feet over all, 10 feet wide, and 12 feet high.

Seven men handle the washing and pasteurising.

The first cost is high, but running costs low, and the quality of the milk the best possible.

The bottle washer takes 2 h.p. to run ; pasteurising section $1\frac{1}{2}$ h.p. to run ; bottle-washing jets $7\frac{1}{2}$ h.p. to run.

A self-registering recording thermometer to record actual milk temperature in the bottles as they pass through the apparatus can be obtained from Taylor Instrument Co., Rochester, New York.

Within recent years an outbreak of typhoid fever which occurred in the upper part of New York City included 85 cases. All of these were persons in households receiving milk from one large milk dealer. The interesting investigation which was carried out by the Board of Health revealed the fact that all of the milk delivered in this section came from one shipping station in New York State in which one of the men employed was a "typhoid carrier." This man's work consisted in putting caps on the glass milk bottles after they were filled with milk.

Experiences which the milk business is now passing through are past history in the brewing industry.

The processes adopted by them in the first instances were very similar to those now practised in the milk industry. Beer was heated in tanks in bulk and was pasteurised before being placed in bottles, but the recontamination of beer through handling subsequent to pasteurisation gradually forced the brewing industry to adopt measures which would guard against recontamination. This has resulted in the pasteurisation of beer in the bottle.

It seems most important to ascertain what are the results of the pasteurisation of milk in the bottle. The results of a test are given below :—

Raw.				Pasteurised in the Bottle.			
				1st Layer.	2nd Layer.	3rd Layer.	4th Layer.
250,000	...	...	...	500	1,000	800	600
450,000	...	...	...	100	400	2,500	400
200,000	...	...	...	300	200	400	600
900,000	...	...	...	2,100	600	200	300

The adoption of this method by the large milk dealer will be a great step in advance and not only give additional protection for the

product, but will also give a guarantee to the milk consumer against milk-bourne infections, which has not existed up to this time.

It is only a question of time until this method will take the place of the present methods, as milk dealers are forced to admit this is the ideal system.

Large distributors have very elaborate systems for clarifying, pasteurising, and cooling which, of course, aid in handling a cleaner product that will keep better, as well as one that is more healthful. But even with this care there is always a chance for recontamination after the milk comes in contact with the air, with apparatus of various kinds, more or less intricate, and therefore more or less likely to contaminate milk. The smaller dealer cannot afford to have these elaborate systems of pasteurisation, cooling, bottling and handling of the milk in general. He must practically rely on his ice-box and tank for keeping the milk sweet. If he pasteurises he generally uses some inefficient method, and as a general rule the milk is recontaminated as much before it reaches the bottle—which is not sterile in a great many instances—as it was in the first place.

In all these cases, the bottle is capped with a paraffin paper cap, which is lodged on a counter-sunken ledge. This cap, which is extensively used, is not altogether satisfactory for a number of reasons, among which are: that milk is likely to be left on the cap, making a sticky, sour mass which soon catches a great deal of dirt, and this is very frequently pushed into the bottle and washed off by the milk, contaminating it; then the lip of the bottle is exposed and the driver usually gets the bottle by the neck with his gloves and, when the milk is poured out, it is poured over this dirt; third, the cap can easily be taken off and replaced, and the driver, running short of bottled milk or cream in smaller quantities, can fill bottles on the wagon from the can or large bottles.

The dairyman has been looking for a system to overcome these objectionable features and has found it at last in a new type of bottle in which he can pasteurise successfully.

Pasteurisation in the final package prevents contamination of milk, and also insures the pasteurisation of all materials which formerly came in contact with the milk after heating, which in this case are the bottle and cap.

Milk "pasteurised in the bottle" under metal seal is the only real safe method.

The New Haven Dairy Bottle Pasteurisation is properly and efficiently accomplished by first filling the bottles with milk, sealing hermetically with metal seals and holding the bottles in water kept at 148°F. (about two degrees above the temperature of the milk inside the bottle) for the length of time necessary to properly pasteurise not only the milk, but the interiors of the bottles and the seals as well.

It must be self-evident to you that milk so pasteurised "in the final package" is *safe* and remains secure from all contamination until opened by the consumer.

THE FARMERS' DAIRY (Producers), Toronto (Dairymen's League).

The output of this dairy is 16,000 gallons daily, and the dairy buildings cover an area of 100 feet by 500 feet.

The retail section has 105 wagons with an average load of 300 quarts daily—one delivery.

The trade is done on a cash in advance basis by the issue of tickets.

The water used is the City Supply, and costs .675 cents per 1,000 gallons (128 ozs. to the gallon).

The pasteurising is worked on the hot water circulating plan, somewhat similar to that adopted by the Sheffield Farms, but the equipment is very different.

The milk from the farmers is pumped into large glass-lined storage tanks after being cooled to 40° and is retained at that temperature till ready for use.

The coolers used are of the outside surface type.

Twenty thousand gallons of brine is held in basement and, as drawn off, this passes through the vats containing the expansion coils.

Retail wagons commence loading at 11.45 p.m., and it takes 3½ hours to get them all away.

The total number employed inside is 94 and 147 on the wagons. All employees have one day off per week.

The milk is pre-heated to 138° F., and passed into Cherry Vats Pasteurisers and Holders, in which it is raised to 142°.

The milk is filtered and not cleaned with centrifugal machines.

THE CITY DAIRY Co., Toronto.

This dairy is one of the best visited so far as efficiency of organisation is concerned, and has been established 21 years.

Deliveries of milk are made once daily, starting midnight during the summer period.

The water used in the dairy is City water, which is very cheap, owing to the proximity of Lake Ontario, and the retail deliveries average 400 quarts per day on 149 wagons.

The trade is done on the cash basis, money in advance, by the sale of tickets, and in consequence, the office staff for the 149 rounds is only 14 in number.

There is no independent register of customers apart from the vanman's book, but as he has one day off each week, a close check is kept on his work.

No half-pints are sold by this firm.

The City Dairy started with a dip milk business, and in 1901 switched over to glass bottles at a higher price than the dip milk was being sold at in the City.

Selling price in bottles is \$5.60 per 100 lbs.,

Producer's price „ „ \$2.66 „ 100 „

showing a distributing margin of 2.94 per 100 lbs., which is equal to 1s. 2½d. per gallon.

The producers have a differential price according to quantity produced.

The producers are paid monthly on the 10th of each month.

The Certified milk is sent from their own farms, packed in ice, and the sales of this milk are about 1,200 quarts daily.

The total output of milk is about 15,000 gallons delivered in glass bottles.

The general milk supply is received in sealed cans and passes from motor vans to weighing platform, the empty cans passing on to the can-washer being sealed as they come off dry.

The cans are dried with hot air, and a jet of steam blows the water off the bottoms that would otherwise remain on and possibly contaminate the clean can or lid as it was removed from the washer.

The Rice & Adams can washer is used, with slight modifications.

Ten per cent. of the milk is bought from direct senders and the other 90 per cent. from country depots, and these depots brine cool to 40 per cent., sending it ice-packed in the rail trucks from distances between 80 to 100 miles from Toronto.

Some of the milk is brought to the country depots by the producers and some is collected.

The milk after being weighed is pumped into glass-lined storage tanks, these being brine jacketed, and the milk is held in these glass-lined tanks at about 40° F. till required.

The glass bottles are washed with a Rice & Adams machine and inspected, the rejected bottles being washed on a special brush machine.

The bottles are stacked after washing bottom upwards for some hours to thoroughly dry and cool.

The milk is pre-heated with Danish pasteuriser to 100°, then filtered through bags which are changed every 30 minutes; it is then passed into coil vats where it is heated at 143° and held for 30 minutes.

The coils of these vats we noticed were being scraped in the cleaning by the cleaners with bits of metal—the Cherry Vats obviate this trouble.

The control is by hand release at the end of the 30 minutes.

The stuffing boxes of the vats have to be packed each month.

The general farming conditions apart from the Certified Milk Farms are much the same as in England, so far as the Eastern and Middle West Country through which we passed is concerned, but the cow barns provide much more air space, and their fittings, as a rule, are more sanitary, but the pastures are very poor indeed, if they can be said to exist at all. The chief crops grown in these districts are Indian corn, which is harvested green, chopped, and put into silos for stall feeding; and alfalfa, but practically no roots, the concentrates being imported from other districts.

To summarise the equipment of the dairies inspected, we can take it in sections.

STORAGE.

The storage or receiving tanks are generally glass-lined, being surrounded with a jacket of brine which is kept circulating, and the milk is kept in motion by an agitator. This is the best method of storage or retaining the milk till bottling commences and can scarcely be improved upon.

In some cases the milk is brine cooled before passing into these tanks.

PRE-HEATERS.

There are several types in use, including the Danish Flash pasteuriser, Burrell internal tube heater, Cherry internal tube heater, the open surface heater, and the regenerative heater.

Objection can be taken to all of these, except the last and the Danish heater, owing to the difficulty of insuring absolute cleanliness and freedom from deposit.

The milk is cleaned in some cases by centrifugal cleaners, and in others by filters provided with Domette (a filtering material), but unless the milk is produced clean at the farms, the latter appears to be undesirable.

There are quite a variety of pasteurising processes in use including the coil vat system, which not only raises the milk to 145° but also acts as a holder. This system is objectionable, because of the difficulty in keeping the vats and coils clean, also because a certain percentage of the milk is raised well above the 145° , but in some cases this latter trouble is obviated by passing only hot water at 147° through the coils.

The internal coil system, of which there are at least two types, is open to the same objection as the vat system, but has the advantage of keeping the milk from air contamination, and also from loss by evaporation.

Both these systems are bad, because they necessitate a lot of pipes and pumps in conjunction with the other equipment.

The open surface system through which hot water at 147° is passed appears to be the best so far as bulk pasteurisation is concerned, as it permits of efficient cleaning, and if used in a lofty building does away with pipes and pumps, but the building should be self-contained and supplied with sterilised air, the attendants being supplied with clean white overalls.

The ideal method is pasteurising and cooling under the crown cork in the bottle with a

BARRY-WEHMILLER EQUIPMENT,

as this only requires a sterile bottle, which is essential whatever method is used, and does away with all recontamination by pumps, pipes, tube pasteurisers, tube coolers, surface pasteurisers, surface coolers, bottle fillers, metals and air.

This method also saves about 25 per cent. of the wages bill, gives a lower bacterial count than any other system, and, consequently, a longer keeping milk, and an automatic delivery of finished product is provided.

The Barry-Wehmiller pasteuriser provides for the regenerative principle; economy in heat is secured by passing the water from the colder sections right on through to the warmer sections, so that the heat collected from the bottles is conserved in the water, and if working in conjunction with a Barry-Wehmiller bottle-washer, the final heated water passes into the bottle soaker.

The bottle washers in use are also of several types:—

The Rice and Adams.

The Meyer Dunco.

The Yundt.

The Super-Clean.

The Barry-Wehmiller.

Of these, the Rice and Adams is probably the least efficient, and the Barry-Wehmiller the best.

The Barry-Wehmiller works on the conveyor principle through a series of cups that hold the bottles attached to travelling chains, the bottles passing through a series of distinct and separate tanks, three of which are filled with caustic soda solution and three with clean water, the bottles being emptied after passing through each tank. After these soaking tanks have done their work, the conveyor carries the bottle through a jet washing section and clean water jets under pressure—three in each bottle, one after another—pass into the bottles and the water supplied to the last jet can be sterilised, if necessary—automatic delivery and temperature control makes this system very efficient.

Book-keeping methods vary considerably, but the general methods adopted eliminate the office booking as worked in England. The vanmen book up the customers, having one page for each customer, which lasts a month, and the customer's bill is made out by the vanman, who gives an official receipt when the bill is paid.

Besides this method quite a number of firms adopt the cash in advance system by the sale of tickets, and this system is very economical in every way where it can be adopted.

In conclusion, it would be as well to remember that the American milk distribution methods are about 20 years in advance of England, but many of the firms in America have equipment that it would be very unwise to copy and they themselves would not introduce new equipment of the out-of-date type.

It is up to the Dairy Trade in England to take full advantage of the great kindness shown to their representatives in America in opening all doors for the closer inspection of equipment and methods, and thus enabling them to see and judge for themselves without prejudice or influence in any one direction, and make use of American experience and try to go one better, which should be possible.

HOW TO GET THE MOST OUT OF A DAIRY COW.

By ROBERT SHANKS.

AMONGST all branches of live stock on the farm, considerable advancement has been made the last 20 years, and the greater development has been within the latter half of this period. For those who are in a position to produce milk, this branch of farming is looked upon as being one of—I was going to say the most profitable—the best ways of keeping out of the Bankruptcy Court. It is not possible for a working farmer like myself to throw any new light upon the best means of producing cheap milk; with all the colleges and agricultural organisers throughout the kingdom, conducting experiments and collecting data, with this object in view, and disseminating amongst agriculturists by lectures and writings, their deductions.

As one who is watching closely the gradual developments taking place, with a view to increased milk production on the farm, and at the same time weighing up suggestions and recommendations, as it appears to one who has a living to make in this direction, the deductions I have come to, both through observation and practice, may be of interest to those producing milk. I am perfectly aware that at least one of the theories set forth will not have approval on all sides, but if the comments have the effect of exciting curiosity, and with this curiosity anxiety for further research, then the humble endeavours of a working farmer will be more than realized.

The heading of the article is linked up with biology (life history) and physiology (functions performed by animals) of the animal, coupled with the adaptability to respond to the treatment of man.

Before advancing further, it may be as well to divide the article under three distinct heads. (1) The Cow; (2) The Food; (3) The Man. It is impossible to make a clean cut between each section. All farmers know that for success, combination of the three are essential. Any one of these three factors being inefficient, will make all the difference between profit and loss.

THE COW.

Most farmers, when forming a herd, have to rely upon two factors when purchasing their cows, viz.:—(1) their own judgment, and (2) the depth of their pocket. The latter is usually the “hold up”; but where it is of secondary consideration, coupled with a fair amount of judgment—a crack herd can be collected in a few years.

The appearance of a dairy cow may be most deceptive, as a well-shaped udder does not necessarily follow that there will be a bountiful supply of milk. We often experience unattractive cows giving most profitable yields.

Where milk recording has taken place, one or more year's yield may be given as a guide, but when we come to consider that only $4\frac{1}{2}$ per cent. of the dairy cows in England, and $7\frac{1}{2}$ per cent. in Scotland, are under official control, there is no chance of guidance in the ordinary market. At least 50 per cent. of these the owners would not be prepared to divulge the performance, thus reducing the actual yields as a guide down to 2 per cent. Milk Recorded cattle placed under the hammer, are becoming more and more a feature, and where there is style, combined with constitution, and creditable performance, good figures are always obtained. I am not alluding to pedigree stock. Even where we have what many of us would look upon as an unprofitable performance, if the animal is what is termed a good cow it is surprising how buyers bid for her. This is but proof that farmers, as a whole, have got to be educated up to the true value of milk yields. Valuable as a milk record is as a guide, it is but a beginning, and a profitable beginning which can be turned into a debit if care is not exercised when breeding. Here is where the biological aspect comes in. Whatever sire is used, care must be taken that it must be pure bred. When this is certain the record of his dam and sire's dam must be available for a succession of seasons if possible. Too great emphasis cannot be placed upon this, as comparatively recent experience has shown us. Ten years ago we often repeated that the bull was half the herd. We have got to the pitch that he is at least three-quarters of the herd. Milk heredity is inherited through the sire. The right bull used on moderate cows will add 200 gallons to the progeny over the dam.

One of the most successful (if not the most successful) breeders for milk in the kingdom told me he never paid a long figure for a cow or heifer. All out on the bull, and there is no more striking evidence to-day than the milk records this herd turns out.

Here is one other aspect I have never seen stated in print, viz.: In order to get full benefit from a dairy cow, she must be easily milked. If she is tedious or tough to the milker, the fluid is not drawn away with that rapidity which is essential to getting the last drop. Here, again, after the sire's performance is creditable on paper, to complete the biological examination it is necessary to personally see the dam, as to well-shaped udder, rightly placed teats, coupled with a test as to ease in milking. If he is a ravenous feeder, so much the better, transmitting this property to his progeny. He gives his heifers a good appetite—a *sine qua non* in a dairy cow. Provided that he is true to type, all these qualifications are the ideal, and lucky is the farmer who is fortunate enough to come across them and have the wherewithal to purchase.

When the calves arrive they will not all be good ones, but here you have a nucleus of a dairy herd above the average—providing they are handled properly from the start. This is another subject, where numerous experiments have been conducted, but it is essential to point out the necessity of well-developed youngsters for the creditable performance in the future dairy.

The previous are the salient points which must be kept in view, when attempt is made to improve the output of an ordinary herd, say, producing a milk record of about 600 gals.

I hear some readers say, this is all right enough, but can you give us a wrinkle or two as to how to increase the output of the cows at present in the herd?

Of course this entirely depends upon present management, but the average farmer has yet much to learn as to balanced rations and adjusting the same, so that the production costs come below the value of output.

THE FOOD.

We all know the succulent grasses of May and June always give us the maximum milk yields, and it is up to us to arrange our feeding—as far as possible—apeing at these ideal months, when nature gives us her best. To begin with, most of our pastures can be considerably improved by a liberal dressing of a mixture of kainit and high-grade slag in equal parts up to 10 cwts. per acre. The carpet of clover, usually following this application, is the ideal for milk production, and we notice those bare parts of the field where the creeping clover predominates are persistently grazed by the stock. The question arises that money spent in this direction gives better return in the milk-pail than the same sum devoted to extra feeding stuffs.

A cow yielding from 2 to 4 gallons daily is fully maintained in these months under review. As the season advances, the grass loses its feeding value, and a mixture of coconut cake, palm kernel meal, and ground nut meal may be given to the extent of 3 lbs. for every gallon of milk produced over 2 gallons; thus a 5-gallon cow would receive 9 lbs. daily, gradually worked up to this amount according to the state of the pastures.

Wise is the milk producer who is always prepared for emergencies, in the production of a succession of green crops, thus having at his disposal an unlimited supply of green stuff as many months of the year as possible. Rye is the first ready in Spring, followed by trifolium and ryegrass. Next we get the mixture of oats, beans, and tares, sown at intervals to have a succession coming forward in a green state. Cabbages are a splendid stand-by, and marrow stem kale is becoming more popular every year.

All these green foods utilized as they come forward act as a remarkable stimulant to the dairy cow, even if she has a good pasture. It adds variety to the diet, and, "Variety is the Spice of Life."—*Henry VIII.* During a drought—and there are many in the south of England—they are a god-send.

The value of green food is so important that I am convinced their value cannot be too highly appreciated. In recent volumes of the B.D.F.A.'s Journal we have two articles, "Cabbage as a Milk Producer," by Gervaise Turnbull, and "Dairy Farming on Arable Land," by J. C. Brown, from which valuable hints can be obtained.

Climatic conditions and pests may upset the best endeavours to secure the above. As Burns has it :—

"The best planned schemes o' mice and men gang aft agley."

Under good management it is surprising how many months out of the twelve it is possible to get along with these bulky green foods—foods which will eclipse silage and mangolds as their substitutes. When the cattle are entirely dependent upon house food as much as 1 cwt. per day can be readily given.

Silage is strongly recommended, and no doubt where it is possible to make this; it may replace the root crop. The great drawback I see about it, is the expense of erecting and the machinery required. In most cases both farmer and landlord are too poor to undertake the expense.

When we come to the winter ration, we find it more important, for care in feeding, to maintain the vitality of the productive organs of such a sensitive animal as the dairy cow.

In addition to the green food, silage, or roots referred to, a supply of well-secured hay is important. Fourteen lbs. daily is a fair allowance for an average cow. Where oat straw is available, a plentiful helping in the evening is the best time to give, as what is left—and cows always pick the best—is suitable for litter next day.

These foods are usually referred to as the maintenance diet.

It is when we come to the handling of the concentrated foods that judgment and knowledge play a most important part in the profitable production of milk.

Looking through the advertisement pages of the Agricultural Press, it would appear to be the simplest thing in the world. All you've got to do is, buy "Blagam and Bagam's" world-famed cakes, specially manufactured for special purposes. Reliable herdsmen believe, or at least they try to make others believe, that there is some secret in the way of feeding; especially where abnormal yields are given. I am not going to avail myself of this opportunity to deprecate or otherwise these advertisers, but point out that it is possible for a farmer to make up his own mixture at about £2 per ton less than if he buys an advertised balanced cake or meal.

Most counties now have their agricultural organisers, and these highly trained gentlemen are always available for advice. In addition, we have published monthly in the Journal of the Ministry of Agriculture notes on Feeding Stuffs. This comprehensive table, with foot-note, gives, what I consider, the most valued information in any of the numbers; and points out the cheapest foods on the market.

With a little knowledge as to balancing of rations, and a variety in the mixture, a cheap and palatable food can be mixed for about £9 per ton, or 10d. per lb., at present market prices (December, 1923).

The following are a couple of specimens drawn out for maximum feeding value for money expended :—

Mixtures fed, at rate of 3 lbs. to the gallon of milk.

MIXTURE A.

- 1 Part Coconut Cake.
- 1 „ Maize Gluten Feed.
- 1 „ Palm Kernel Meal.
- $\frac{3}{4}$ „ Decorticated Cotton Seed Meal.

MIXTURE B.

- 1 Part Crushed Oats.
- 1 „ Maize Gluten Feed.
- 1 „ Palm Kernel Meal.
- 1 „ Coconut Cake.
- 1 „ Groundnut Cake.
- 1 „ Groundnut Meal (extracted).
- $\frac{1}{2}$ „ Bean Meal.

Never have less than three ingredients, but better still if there is half-a-dozen, and the changes can be rung when it is beneficial to do so. For milk production always keep the ratio on the albuminous side ; 1·3 or 1·4 is a safe guide.

Before finishing with the food aspect, I must refer to treatment of the cow, when she is dried off, and not a milk producer. Most farmers make the mistake of reducing the concentrates down to practically nil, using the argument that the animal does not require it when she is a non-producer. It is at this period of her life she is most vigorous, when carrying her calf the last two months. The opportunity arises to build up her constitution. The food should not fall below a 2-gallon production standard, if the future milking period is to have a fair chance.

One generally finds that a cow eats more heartily at the close of her gestation period, and calving with a bloom on her, she is prepared for any trivial set-backs which may befall her after calving. It is no uncommon experience to run up against an animal which does not relish her food for a month or two after calving, and if she is properly built up, the well-nourished body supplies the want which her food is unable to do.

As we go on advancing our milk yields, and expect our cows to maintain a regular breeding habit, with this demand, our methods of

handling must have in view the maintenance and development of the animal under our care. It is not for me to say what is the amount of mineral matter a 1,000-gallon cow gives up in the year through the production of this quantity of milk. It is bound to be considerable, and the latest attempts to replace this is in the form of steamed bone flour mixed with the concentrated diet. We are but in the experimental stage here, and have to arrive at the approximate quantity per gallon of milk produced, assuming, of course, this "wheeze" turns out beneficial. The question arises "Would it be advantageous to give a cow, say, 1 oz. daily when she was a non-producer, in addition to a similar quantity when in milk?" adopting the building up argument as previously referred to.

This is a line of investigation for experimental stations. Advanced farmers are looking for guidance here.

THE MAN.

Coming to the last section, it is the duty of the herdsman to make the most of the cow and food at his disposal. The primary object which must be kept in view is economical production. No more hay should be given than the cattle readily clean up, as this is a cause of considerable waste in many cow stalls. Regularity is a *sine qua non*, and whatever times are fixed for feeding and milking, these must be strictly adhered to and not vary more than five to ten minutes. It is remarkable what the daily milk record reveals when some unavoidable delay upsets the systematic routine.

Whatever the winter diet may consist of, I find it advisable to turn out for water twice daily. The stalls are easier to clean out, and greater freedom is given for feeding when the cattle are outside, having their legs stretched, and a better opportunity is given to catch the animals in season; a most important matter particularly with the autumn calvers.

First thing in the morning milking has to be done, but it is essential that the cows get part of their food before starting, and with as little delay as possible.

Every cow must be fed according to her yield, and if half of her concentrated ration is placed in a small sack immediately behind her the previous evening ready for feeding in the morning, followed by half of her daily ration of hay, this entails the least possible delay before littering down and milking.

Twice I have mentioned in this paper the necessity of feeding according to milk yield. The only way to make an accurate check is by *daily weighing* of the milk, thus watching the rise and fall of each individual output.

It is not advisable to adhere to any hard and fast rule with a herd of sensitive dairy cows. The herdsman studies the individuality of

each, and treats her accordingly. If he considers the milk yield is falling too rapidly, it is up to him to find the cause and remedy it if possible. All cows have not the same ravenous appetite, although it is important that they should have. There are always some in a herd which want humouring in their diet and may even have to go as far as to have a special mixture.

I find ordinary treacle is a splendid appetiser, and some poured over their meal and mixed through often has the effect of inducing a cow to lick out her trough.

We like to come across a cow's trough as if it had been washed, and if it is not in this state care must be taken to keep it so.

To maintain a regular milk yield, the same milker should always milk the same cows. Each get accustomed to the other, and the cows yield up their maximum quantity of milk. But recently I had a striking experience. A new milker was introduced, and although he was better at his work than his predecessor, all the cows he milked dropped 4 or 5 lbs. daily. I should have considered this unusual fall to climatic conditions or something over which we had no control, but those cows only dropped in their yield, which were milked by the strange cowman. In a week they were back to their normal.

Gentleness, with efficiency, is the keynote to success, and those qualifications are invaluable when found in a head herdsman who has sole control and management. His services cannot be too highly valued.

THREE TIMES DAILY MILKING.

The suggestion of this adds additional responsibilities to the men in charge. Where it is possible for a clean cut of 12 hours between each milking, there is not the same necessity to undertake the additional labour. In comparatively few dairies this can be done, and on milk selling farms the disparity between the hours is often 8 and 16. It is here that heavy yielding cows cannot possibly give up their best. I will go further and say that a dairy cow which farmers are proud to possess, pays for three times daily milking. I am not referring to the cream of a herd, with a daily yield of from 5 to 7 gallons, but outputs down to 3 gallons daily. Each cow has her individuality and capacity for carrying, and again here is an additional opportunity for the herdsman to use his judgment when it is advisable to turn off to twice milking. To make it perfectly clear what I mean, suppose we have on the record sheet 11, 7, 12 lbs., obtained at 1 p.m., 8 p.m. and 6 a.m. Drop the 8 p.m. milking and you will invariably find that the most of this is lost in future, at least 5 lbs. of it.

We are too familiar with the old stock argument of undermining the constitution of the cow. The man who goes to the trouble and expense of milking three times daily is usually a farmer who has his cows and their welfare at heart, building up their constitution by careful and assiduous attention.

To drive home my argument further I have figures of 6 cows from my herd (Milk Recording year). The year 1920-21 they were twice milked daily, and two succeeding years three times, as long as it was deemed advisable. They are average cows, with average yields, and this ought to be of more value than the production of abnormal figures.

	Milk yield when twice milked daily 1920-21.	Milk yield when three times milked	
		1921-1922.	1922-1923.
1	6,425 4th calf	10,050	10,513
2	6,419 2nd calf	9,685	10,575
3	6,217 4th calf	10,155	9,661
4	5,085 2nd calf	7,675	8,302
5	7,113 2nd calf	8,661	8,295
6	5,622 2nd calf	8,825	8,793

These figures ought to be conclusive proof that it pays, apart from the humane point of view, with the extra heavy milkers.

Approximately speaking it means converting an 800 gallon cow into a 1,000-gallon cow. Reduced to £ s. d. at 1s. per gallon, it is £10 additional value of milk produced.

From what I have seen of three times daily milked cows, I am convinced that it has the opposite effect to undermining the constitution. With tender treatment and well-balanced rations, the right cow grows and develops under the system. I will go further and say that this development is transmitted to the offspring. Take a cow yielding 800 gallons twice milked, switched on to three times milking, the yield is increased to something like 1,000 gallons. Assuming she is breeding heifer calves, under which treatment will they be best for the dairy, all other factors being equal? I say the latter.

AYRSHIRE CATTLE.

By HUGH BONE.

As the name implies, this breed of cattle had its original home in the County of Ayr, whose shores are washed by the Firth of Clyde. Ayr, and the adjoining County of Dumfries, are known the world over as the "Land o' Burns," that land within whose confines was born the Ploughman Poet, Robert Burns. Thousands of people come every year to visit the humble cottage where the Poet was born in Alloway, near Ayr, but how many of these ever think that Burns once kept Ayrshire cows. As a matter of fact Burns had a dairy of Ayrshire cows at Ellisland Farm, near Dumfries, and made considerable quantities of cheese from their milk.

But the origin of the Ayrshire goes very many years further back than the time of Burns. The ancient origin is by no means clear. Some early writers mention imported blood from abroad—Holland, Scandinavia, and even Spain being mentioned. There is no evidence, however, that direct importation of foreign blood was ever made into Ayrshire, but only through a medium. It is generally admitted by most of the early writers, and particularly Aiton (1811), that judicious selection and mating among the native cattle, coupled with improved feeding and handling, were important factors in the evolution of the breed. The Minutes of the Kilmarnock Farmers' Club, instituted 1793, speak of the "Black Breed of Cattle." In 1811, however, the word "Black" is left out, as at that date, indeed shortly before, there were large numbers of brown and white cattle in Ayrshire. From then the prevailing colour may be described as brown and white. In 1814 the Minutes refer to the cattle as the "Cunningham" breed. It may be mentioned that the County of Ayr is divided into three parts, Cunningham in the north, Kyle in the centre, and Carrick in the south. There is an old rhyme which runs—

Kyle for a man
Carrick for a coo,
Cunningham for Butter and Cheese
And Galloway for woo'.

Other writers state that the real name by which the breed was first known was that of "Dunlop" cattle, derived either from Mr. Dunlop, of Dunlop House (who was credited with being one of the introducers of the breed), or from the Parish of Dunlop in which Dunlop House is situated. The breed soon spread to other districts in Ayrshire, and so became known generally as the Ayrshire breed. The demands of the times have somewhat changed the prevailing colour of the Ayrshire from being brown or brown and white to white, with brown cheeks, or white with brown markings on cheeks and body. There

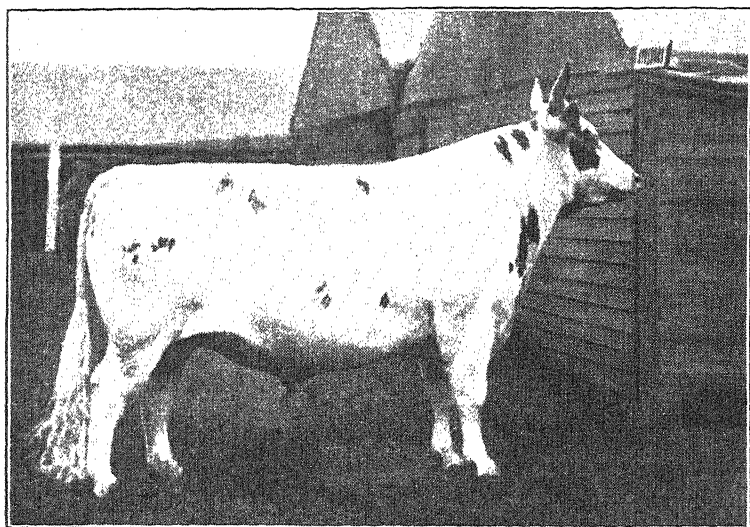
are, of course, still a considerable number of black and white Ayrshires in Scotland, but these are not generally in favour.

In the early days the pasture lands of Ayrshire were poor and the cattle were of a diminutive size, ill-fed and ill-shaped. Buffeted about as they were by the fierce storms which swept in from the Atlantic Ocean, they could not be expected to give a large quantity of milk under such conditions. One of the early writers, Rawlin, writing in 1794 says, however, "They have another breed called the Dunlop, which are allowed to be the best race for yielding milk in Great Britain or Ireland, not only for large quantities, but also for richness and quality." This, though extravagant praise, perhaps, shows that the stock possessed remarkable qualities at that early day. Gradually pastures were improved; better farming and dairying methods were introduced and from such unpromising foundations the present day Ayrshire was raised up. This improvement came gradually as knowledge grew. Breeders began to try and improve the milking qualities of their herds by careful selection and proper attention until to-day the Ayrshire stands out by itself as the ideal dairy breed. It is a well known fact that Scotsmen are to be found in every quarter of the globe. As with the men, so with Scotland's dairy breed. The sun never sets on the Ayrshire cow. This is proved by the fact that the breed has been exported to almost every civilised country in the world. Ayrshires are to be found in large numbers in Canada, U.S.A., Norway, Sweden, Finland, Australia, New Zealand, South Africa, China, Japan and India, while they are also to be found in East and West Africa, Egypt, Spain, Portugal, France, Belgium, Germany, Ceylon, Burma, Russia, Brazil, Cuba, Ecuador, Chili, Mexico, Jamaica, Argentine, Peru, Nyassaland, Greece, Rhodesia, and other countries. It is the dairy breed of Sweden and Finland. All these countries have found the Ayrshire suited to their needs and their buyers return year after year for fresh stock. Since 1913, 1828 Ayrshires of both sexes have been exported abroad.

The extremes of climate, as represented by, say Finland and India, have no adverse effect on the Ayrshire. Much of the land on which the cattle are raised is upwards of 1,000 feet above sea level. The young stock are wintered out and the cows in-milk are only brought into the byre when severe weather comes on, or there is not enough grass to keep them going. This tends to make them hardy and able to resist disease. There are, indeed, no healthier cattle to be found anywhere.

The Ayrshire combines beauty of form with utility. There is no more pleasing sight in cattledom than a herd of Ayrshires grazing quietly in a park. The stylish head and horns, the beautiful symmetrical body, the wonderful udders, the carriage and docility, the rich colourings of reds, browns and whites, attract the eye as no other breed can.

The principal points of the Ayrshire cow are that she is wedge-shaped, head short, forehead broad, muzzle large, horns wide set on

**HOBSLAND MENDEL.**

18422.

Bred by Thomas Barr, Hobsland, Monkton. The Property of the Hon. G. Corbett, Rowallan, Kilmarnock. Winner of the Male Championship at Highland and Agricultural Society's Show, Inverness, 1923. Purchased for 1,780 guineas as a Yearling. Sire, "Hobsland Lucky Boy." Dam, "Hobsland Jean 5th." (See records in article.)

Photo by Reid, Wishaw.

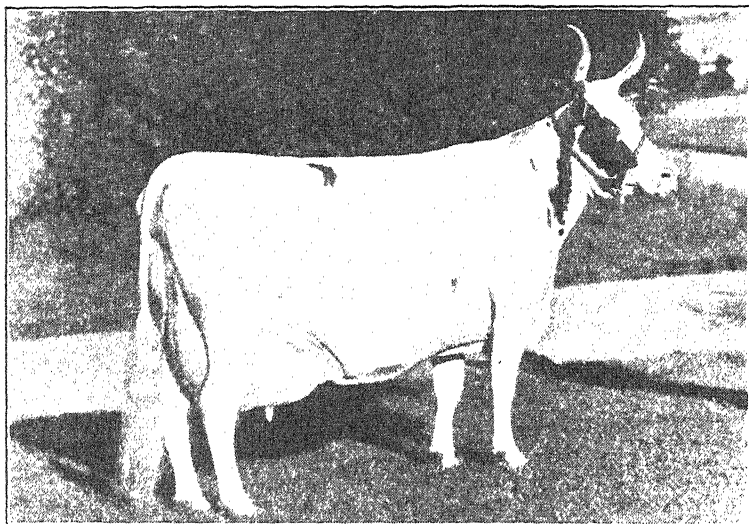
and inclining upwards, forequarters light, body set on straight, short legs, back strong and straight, ribs large, broad and wide apart, abdomen capacious, deep, firmly held up, hind quarters wide, level and long; hooks wide apart; udder long, wide and deep and extending far forward; quarters even; udder veins well developed; teats evenly placed, $2\frac{1}{2}$ to $3\frac{1}{2}$ inches long, hanging perpendicular; mammary veins large, long and tortuous; prevailing colour, white and brown; style, alert and vigorous and temperament mild.

It is on her ability to perform at the pail that the Ayrshire cow's claim for popularity is based. She can produce milk in abundance, of a quality high above the standard required by Government. She, moreover, produces it easily and at a comparatively low cost. It is, indeed, when we come to consider the quantity and quality of milk, combined with the cost of feed, and compare these with the amount received for her milk, butter or cheese, that we see how economical the Ayrshire can be. There is no other breed that can touch her where all these points are considered. Her ability to reproduce in her offspring her own good qualities is a strong characteristic, and as with the cow, so with the bull. Information to hand from India indicates that a heifer, the first cross from a native Indian cow on one of the Government farms and an Ayrshire bull, gave nearly three times as much milk as her mother.

The Breed Society has never encouraged abnormal yields of milk. Nevertheless, the Ayrshire can boast of having 2,000 gallon cows, both in Scotland and America, but the breeders do not go out for "stunt" records. The herds of Ayrshires are in the hands of tenant farmers in Scotland, who have to make their living and pay their rent by their dairies. They cannot afford to give cows abnormal quantities of concentrated food, in addition to other feeding, in order to make a big record for advertisement purposes. What the Scottish breeder is after is to have his herd averaging 900 gallons milk or over of 3·8 per cent. to 4 per cent. butter fat, with the cows producing a live calf every year, and to have these produced under normal conditions, without forcing. It will be admitted that this is a much better paying proposition than having a huge feed bill to meet at the end of a year, just for the sake of being able to say that one has a 2,000 or 3,000 gallonner in one's herd.

The average percentage of butter fat in Ayrshire milk is 4 per cent. Milk fat is present in smaller fat globules, which renders the milk and milk products more digestible and more readily assimilated than those of any other breed. It is thus specially suited for infants and invalids. In regard to cheesemaking, Professor Sheldon writing in "*British Dairying*" states:—"It may well be doubted if, as purely dairy cattle suitable for cheesemaking or the milk trade, there is a breed in the British Islands that will surpass the Ayrshire." Ample proof that the milk of the Ayrshire cow is best suited to cheesemaking can be cited from the awards at the London Dairy Show. Year after year Scots cheesemakers have carried off the championships and prizes for Cheddar cheese at this Show. This happened again at the 1923 Show. All the Scotch cheese exhibited were made from the milk of Ayrshire cows.

The system of Milk Recording, as carried out in Scotland, is acknowledged to be the best yet devised. It is somewhat different from that practised in England. Milk recording in Scotland has been carried on for over 20 years, and is now conducted under the auspices of the Scottish Milk Records Association. This Association administers an annual grant, received from the Board of Agriculture and Fisheries for Scotland. The recording is carried on through Local Milk Recording Societies, which employ a neutral party, who has no connection whatever with the members or herds, to act as milk recorder. These recorders are specially trained for the work at the West of Scotland Agricultural College, Dairy School, Kilmarnock. They visit the farms at intervals varying from 14 to 28 days. The milk is received by the recorder at the side of the cow and is immediately weighed and a sample taken for butter-fat testing. This takes place night and morning, there being very few farms where three milkings daily are carried out. The mixed evening and morning sample for each cow is tested by the Gerber method for percentage of milk fat. These results are entered into the byre sheets, the recorder multiplying the yields by the exact number of days which have elapsed



LESSNESSOCK MISS LOUDON.

28218.

Bred by A. W. Montgomerie, Lessnessock, Ochiltree. Exported to America.
American Record:—17,029 lbs. Milk. 645'25 lbs. Butter Fat.

since his last visit, but so calculating throughout that each day of visit is regarded as the middle day of the period covered by the test. It will be seen from above that the farmer is not permitted to have anything to do with the weighing or sampling of the milk. A distinctive feature is the system of surprise check tests carried out. The recorder is instructed by letter from the Superintendent on a date unknown to the recorder and owner of the herd to remain at the same farm another day and make another complete 24 hours' test. In addition, a double surprise check test is carried out by the Assistant Superintendent from the Central Office, who may call at any farm on any day and carry out a surprise check test. These tests are to eliminate as far as possible the chance of any fraud being perpetrated. If it is found that there is any abnormal difference between the ordinary test and a check test, the matter is investigated at once. It will be admitted that the above system gives confidence to a purchaser of milk record cattle, in that he can rely on the records being authentic. The Scottish Milk Records Association issues annually a report on milk records, and in the report for 1922 recently issued it is stated that there were 691 herds and 27,275 cows and heifers tested. It is estimated that in 1923 there are approximately 708 herds and 28,500 cows and heifers under test, 97 per cent. of which are Ayrshire cows.

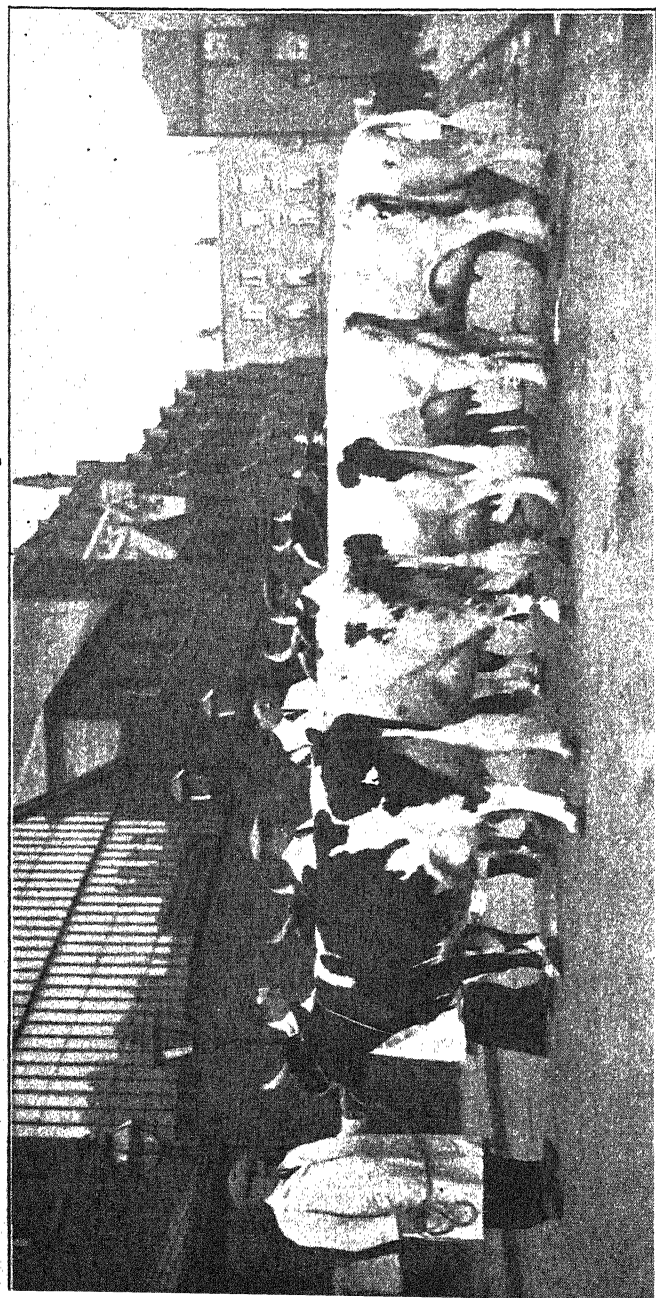
It is comparatively easy for a cow to make a big record for a year and then perhaps never make another one worth speaking about. It is a much more difficult thing, however, to produce a succession

of good yields and at the same time produce a calf every year. The following few records will suffice to show the inherent milking qualities of the Ayrshire cow as a producer of milk:—

Name of Cow.	Age in Years.	Year.	Gallons.	Per cent. Butter Fat.	Weeks.
Auchinbay Highland Mary 2nd, A 34	5	1913	1,048	3·86	41
	6	1914	1,019	3·84	40
	7	1915	1,233	3·83	45
	8	1916	1,056	3·62	37
	9	1917	1,042	3·52	42
	10	1918	1,061	4·05	38
	11	1919	1,032	3·93	36
Bargenoch Hope 2nd, 29774	6	1916	1,045	3·90	37
	7	1917	1,053	3·88	41
	8	1918	1,085	4·09	41
	9	1919	1,103	4·04	39
	10	1920	1,052	4·13	41
	11	1921	1,169	4·00	40
	12	1922	1,246	4·39	39
South Craig Nellie, 29635	4	1913	899	3·69	38
	5	1914	1,014	3·54	38
	6	1915	1,088	3·77	39
	7	1916	1,229	3·87	45
	9	1918	1,103	3·85	45
	10	1919	1,221	3·77	43
	11	1920	1,179	3·73	43
	12	1921	981	3·76	37
Garclaugh Dainty 6th, 40068	3	1914	1,013	3·96	46
	4	1915	1,076	3·96	44
	5	1916	1,178	4·24	44
	6	1917	1,074	3·95	43
	7	1918	1,014	4·05	42
	8	1919	1,047	4·07	45
	9	1920	1,295	3·98	42
Hobsland Jean 5th, 37813	3	1916	1,125	3·97	48
	4	1917	945	3·75	42
	5	1918	1,000	3·70	44
	6	1919	1,000	3·98	43
	7	1920	1,136	3·70	47
	8	1921	1,349	3·61	45
	9	1922	1,155	3·81	38

It must be remembered that each of these cows produced a calf every year was fed under ordinary farm conditions, and was only milked twice daily.

In the Report on Milk Records above referred to there appears a list of the sixty highest milk yields produced in Scotland in 1922



DAIRY SHOW, AGRICULTURAL HALL, ISLINGTON.

GROUP OF AYRSHIRE COWS, WINNERS OF THE BLEDISLO.

Left to Right—"Barr Amelia," A. & A. Kirkpatrick, "Aitkenbar Kate 3rd," A. W. Allan, "Barsibly Irelga," G. Dunlop, "Southside Rosie 2nd," Thomas Barr, "Netherton Queen Green," J. R. Patrick, "Self, D.S."

Photo by Sport and General Press Agency.

of all cows which produced another calf in not more than 13 months from date of calving preceding opening of record. Of these 60, 37 of them are Ayrshires, 15 British Friesians, and the remainder cross cows. The list is headed by the ten-year-old Ayrshire cow "Glenshamrock Ellen, 37144." Her milk record is as follows:—

Calved 24th January, 1922; calved again, 12th February, 1923.

18,500 lbs. milk of 4.22 per cent. butter fat in 47 weeks.

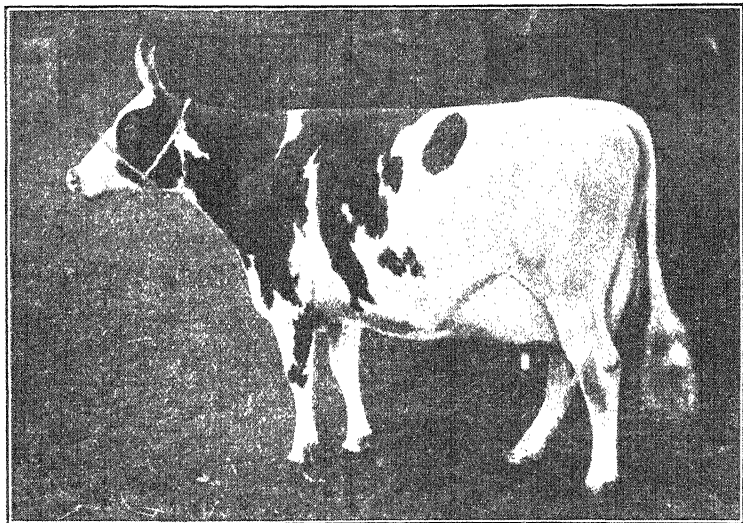
This cow was still giving 30 lbs. of milk at last test. It will thus be seen that in addition to the large milk yield that the butter fat is very high. Since above was written, "Glenshamrock Ellen" has completed another lactation. Calving on 17th February, 1923, and calving again on 14th January, 1924, she has given 20,160 lbs. milk at 4.13 per cent. butter fat in 46 weeks. Other Ayrshires in this list include the following:—

Name.	Date of Calving.	Calved again.	Gallons.	Per cent. B. F.	Age in Years.
Midtown Snowdrop 3rd, A 1915	6 Jan., 1922	29 Jan., 1923	1,501	4.34	11
Townfoot Bugle, 60983	25 Mar., 1921	17 Mar., 1922	1,560	3.96	5
Corsehill Kirsty 2nd, 72064	22 Mar., 1921	14 Mar., 1922	1,438	4.15	4
Westburn Miss Gray, 57136	10 Mar., 1921	9 April, 1922	1,591	3.69	5
College Baroness, 54092...	22 Oct., 1921	20 Nov., 1922	1,342	4.09	6
Bargenoch Hope 2nd, 29774	14 Feb., 1922	26 Feb., 1923	1,246	4.39	12
Kirkland Merry Maid, 62883	30 Jan., 1922	20 Feb., 1923	1,454	3.71	6

The yields of the remaining 29 cows run from 10,000 to 12,000 lbs.

There is also a list of the ten best heifers which produced another calf in not more than 15 months from date of calving preceding opening of record. Seven of these are Ayrshires, the remainder being British Friesians. The Ayrshire records are as follows:—

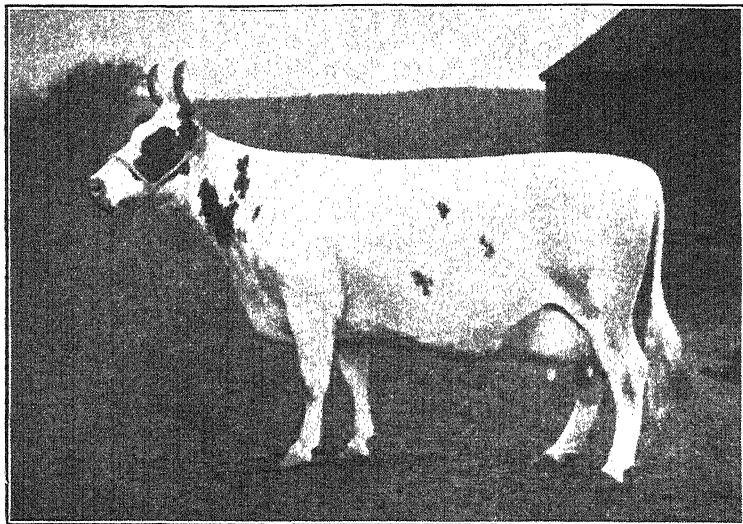
Name.	Date of Calving.	Calved again.	Gallons.	Per cent. Butter Fat.
Barr Christine, 68907 ...	15 Jan., 1922	16 Feb., 1923	1,269	4.03
Westburn Snowdrop 6th 67211	27 Oct., 1921	26 Jan., 1923	1,200	4.03
Kilfillan Blaeberry, A 7846	29 Dec., 1921	24 Feb., 1923	1,344	3.53
Dykes Ellen 2nd, 68859	31 Oct., 1921	24 Jan., 1923	1,033	4.75
Thornhill Molly, 62890	16 Aug., 1921	9 Oct., 1922	1,159	4.17
Mainhill Primrose 2nd, 59657	15 Nov., 1921	12 Feb., 1923	1,125	4.26
Netherhall Topsy, 58813	18 Aug., 1921	25 Oct. 1923	1,126	4.22

**SHEWALTON MAINS VIOLET 3rd.**

58380.

Bred and Owned by James Seton, Shewalton Mains, Irvine. Female Champion at Ayrshire Cattle Herd Book Society's New Show, February, 1923. Milk Record:—10,300 lbs. at 3'94 per cent. Butter Fat as a Heifer. 10,510 lbs. at 4'05 per cent. Butter Fat.

Photo by Reid, Wishaw

**GLENSHAMROCK ELLEN.**

37144.

Bred and Owned by James Kennedy, Glenshamrock, Auchinleck. Milk Record.—Date of Calving, 24th January, 1922. Calved again, 17th February, 1923. 18,510 lbs. at 4'22 per cent. Butter Fat in 47 weeks. Date of Calving, 17th February, 1923. Calved again, 14th January, 1924. 20,160 lbs. at 4'13 per cent. Butter Fat in 46 weeks.

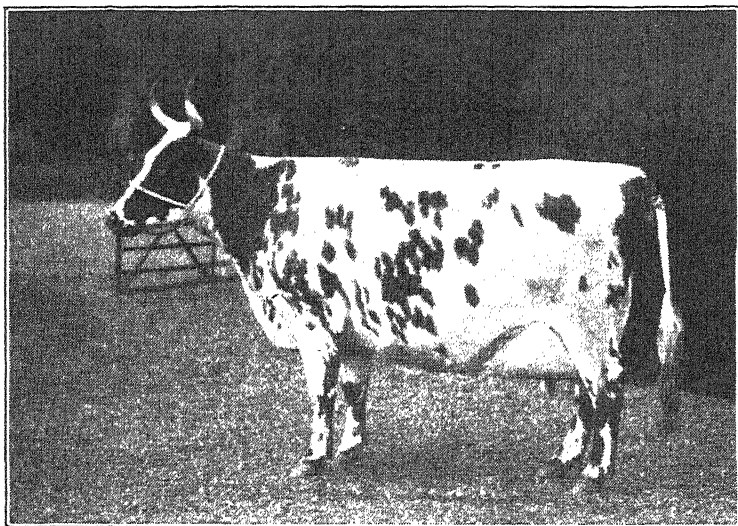
Photo by Reid, Wishaw. Taken at end of Lactation.

There is yet a third table giving the ten highest yields of all heifers which produced another calf in not more than 13 months from date of calving preceding opening of record. Eight of these are Ayrshires and two British Friesians. The yields of the Ayrshire heifers run from 1,372 gallons down to 1,011 gallons, the butter fat percentages running from 4.60 to 3.70.

The above records will suffice to show that the Ayrshire is a first-class milk cow and gives a high percentage of butter fat. Many of the creameries in Scotland, as well as in Canada and in the United States of America, pay for the milk brought to them according to its butter fat content. It is only a question of time when all other such concerns in this country will do likewise. It is here that the Ayrshire scores over other heavier breeds. Such breeds may give a large quantity of milk, but the butter fat is often very low.

The question has often been asked by intending purchasers of Ayrshire cattle as to whether the calves are good for rearing purposes as fat. The experience of one Ayrshire breeder may be of interest. This breeder has a herd of over 100 cows. He keeps all his calves and sells them either as stores or as fat. Stores recently sold as two-year-olds realised from £25 to £32 each. Their weights averaged from 8½ cwt. to 11 cwt. Three-year-olds sold at prices ranging from £35 to £48 each, their weights being from 10½ cwt. to 14½ cwt. The above will show that Ayrshire calves can be reared quite profitably.

It will no doubt interest many readers to know that the Ayrshire Cattle Herd Book Society inaugurated a system of Show Judging by Points, so as to give weight to milk produced when awarding prizes in the show ring. Under this system of judging, points not exceeding 65 are given for appearance of the animal, including form, symmetry, constitution, udder, teats, milk veins, &c., while a maximum of 35 points is allowed for authenticated milk yield in the case of a cow, or authenticated milking pedigree in the case of bulls and younger females. The term "Milking Pedigree" means the milk record of the dam and dam of sire of the animal. A minimum and a maximum yield has been fixed. The minimum is 500 gallons in the case of a heifer, and 650 gallons in the case of a cow, below which no animal can get points for milk, and it is therefore useless to show it. The maximum is 850 gallons in the case of a heifer and 1,000 gallons in the case of a cow, all at 3.8 per cent. butter fat. In addition to this all yields must have been obtained in one lactation period. Fifty-two weeks are taken as the normal period between calvings, and all yields of lactations beyond the normal are reduced in inverse proportion to the length of lactation as compared with the normal, calculating to the nearest full week. This is done by first of all bringing the actual yield to 3.8 per cent. butter fat, and where a cow has say, 56 weeks between calvings, the yield is multiplied by 52 and divided by 56. By this means all animals are brought to the same level. One point is given for every complete ten gallons over the minimum. The method of actual judging in the ring is a very simple one. The judge places the

**CARSTON CINDERELLA 2nd.**

36325.

The Property of Jacob S. Murray, Dalgig, New Cumnock. Winner of the Milking Trials at the R. A. S. E. Show, Cambridge, 1922. Confined to Medium Breeds. Milk Record:—11,170 lbs. at 3'89 per cent. Butter Fat in 49 weeks.

Photo by Brown, Lanark.

animals, as per inspection, in the ordinary way, and he must give the full 65 points for inspection to the animal he places first in each and every class. The other animals in the class are pointed in proportion, according to the relation they bear to the leading animal. The judge then hands the inspection points to the steward, who adds the milk points, as previously calculated by the Secretary and as printed in the catalogue. The animals are then reshuffled, if necessary, and placed in position for the prizes. The public round the ring thus see how the animals are placed, as per inspection, and what difference, if any, the addition of the milk points makes in awarding a prize. It is a well-known fact that appearances are often deceitful, and a cow may have the appearance of being able to give a large yield, but actually only gives a moderate yield; while on the other hand a cow may not have the appearance of being a big milker, but is actually able to give a large quantity. The Ayrshire Society is thus the first and only breed society to adopt this system of giving weight to actual performance at the pail, combined with appearance, when awarding prizes for dairy stock.

We may now consider what the Ayrshires have done when competing against other breeds. It is really only during 1922 and 1923 that the breed has been in serious competition with others at the National Shows in England. At the Royal Agricultural Society's

Show at Cambridge, in 1922, the Ayrshire cow, "Carston Cinderella 2nd, 36325," belonging to Mr. Jacob S. Murray, Dalgig, New Cumnock, won the championship for the medium breeds in the Milking Trials. Her yield of milk in the 24 hours was 64·4 lbs., of 3·72 per cent. butter fat, and the actual yield of butter was 2 lbs. 9½ ozs. At the Show of the British Dairy Farmers' Association in London, in 1922, the Ayrshire cattle were the talk of the Show. The Association's journal recorded the fact in these words:—"Perhaps the most remarkable feature of the 1922 Show was the fine exhibit of Ayrshire Cows and Heifers. . . . They were greatly admired as dairy cattle." At this Show an Ayrshire heifer gained the highest points of any heifer in the Show. This was "Buntonhill Eunice 2nd, 75998," the property of Mr. William Murdoch, Buntonhill, Kilmaurs, which scored 95·5 points. In commenting on this class the journal goes on to say:—"This class is worthy of the most unstinted praise. A record has been created which can never be broken, but only equalled, in that all the entries (ten) appeared in the Show yard and every heifer was awarded points in excess of the class standard (60 points). It is a rare occurrence for a whole class to be so uniformly excellent, especially at their first appearance in the Show." Everyone of these heifers gained a Certificate of Merit in the Milking Trial, a feat never before accomplished by any breed. It is perhaps of interest to state that "Buntonhill Eunice 2nd," after calving on 2nd October, 1922, gave 14,330 lbs. milk at 4·38 per cent. butter fat in 47 weeks, and was still giving 36½ lbs. at her last test. She calved again on 6th November, 1923, and since then has given 3,310 lbs. at 4·36 per cent. butter fat in eight weeks.

The biggest success the Ayrshire has ever achieved was that at the recent London Dairy Show. It is now a matter of history how the "Bledisloe" Challenge Trophy, which is awarded to the Breed Society adjudged to have the best exhibit of good all-round dairy cows, was won by the six Ayrshire cows present at the Show. Through the outbreaks of foot and mouth disease in England (the disease had not at that time broken out in Scotland), a number of intending Ayrshire cattle exhibitors did not send their exhibits forward. In consequence of this there were only six cows at the Show and ten heifers. This was exactly a half of the number of exhibits entered. It will thus be seen that the Ayrshires had not the choice of two cow classes to make up the six animals, as had the other breeds. The number of points scored by the winning six cows was 1,111, the runners-up scoring 1,071 points. Another triumph yet awaited the breed when the "Spencer" Challenge Cup for the Best Dairy Cow in the Show by inspection, milking trial and butter test was won by the Ayrshire cow "Barr Amelia," the property of Messrs. A. & A. Kirkpatrick, Barr, Sanquhar. This cow, which is seven years old, was first in each of the three classes. The Ayrshire section was, indeed, the only one in the Show where the inspection prizes also went to the prize winners in the milking trials and butter tests. The

**BARR AMELIA.**

59782.

The Property of A. & A. Kirkpatrick, Barr, Sanquhar. Winner of the Spencer Cup at the London Dairy Show for Best Dairy Cow by Inspection, Milking Trial and Butter Test, and Winner of "Rowallan" Cup for Best Ayrshire. Milk Record:—1921—10,130 lbs. of 4.43 per cent. Butter Fat in 43 weeks. 1922—12,750 lbs. of 3.9 per cent. Butter Fat in 36 weeks.

Photo by Brown, Lanark.

average yield of milk of this cow was 34.1 lbs. at 4.70 per cent. butter fat in the morning, and 26.88 lbs. at 6.49 per cent. butter fat in the evening. In the butter test her milk yield was 61.11 lbs., and her yield of butter, 3 lbs. 0 $\frac{3}{4}$ ozs., the ratio being 20.24 lbs. milk to 1 lb. butter. "Barr Amelia" was also awarded the "Rowallan" Champion Cup for the Best Ayrshire, competed for under the same conditions as the "Spencer" Cup referred to above. The "Mond" Special Prize, for the best two animals, bred by exhibitor and got by the same sire, open to all breeds, was won by two Ayrshire heifers, belonging to Major C. Randolph Dudgeon, M.P., Cargen Holm, Dumfries. The average milk yield for each of the two days of these two heifers was remarkably fine, that of "Cargen Holm Maud 16th" averaging 50.1 lbs. at 4.05 per cent. butter fat, while the other, "Cargen Holm Proud Lady 8th" yielded an average of 47 lbs. at 4.23 per cent. butter fat.

For a long period of years practically no Ayrshires were exhibited at London. In 1921 there were only two exhibits, but these did so well that the then President of the Society, Mr. A. W. Montgomerie, Lessnessock, Ochiltree, became firmly convinced that the breed could do very much better if proper efforts were made to get a better class of animal exhibited. At the 1922 Show the Breed Society offered to pay the freight charges on all cows and heifers exhibited, and this was the means of bringing out 27 entries. The offer of the Society

was repeated to the extent of one-half at the 1923 Show, so that intending exhibitors had the opportunity of preparing animals for the Show. How well the breeders responded was exemplified by the entries, totalling 32. The most sanguine supporters of the breed never dreamed that the crowning successes would come so soon as in two years' time. It speaks volumes for the enthusiasm of the breeders and the undoubted ability of the cattle to travel over 400 miles to the Show and win the two principal trophies there over all the other breeds.

Lack of funds has prevented the Ayrshire breed from being so largely advertised as some other breeds. The publicity gained by the successes at the London Dairy Show, however, has brought many enquiries, and a large number of animals have been sent into England, where the ability of the Ayrshire to produce a large quantity of milk at a comparatively low cost is becoming more widely known.

Those interested in dairy cattle and dairying do not require to be told that the essential qualities of a dairy breed are:—type, hardiness of constitution, milk production, high butter-fat percentage, good breeding qualities, economy in keep. All these are to be found in the Ayrshire. To those who may be about to found a dairy herd, or who may wish to try out another breed than their present one, we would recommend consideration of the claims of the Ayrshire. Though of medium size she will yield milk in quantity and quality equal to the heavier dairy breeds. In comparison with the amount of food consumed, her milk production is not surpassed by any breed. She is of hardy constitution, has a good appetite, and is not too particular about the kind or quality of her food. On high-lying and exposed lands she is the ideal dairy cow. She responds readily to better food and better pastures. She has already made her way to all parts of the world. She is equally the cow of the large farmer and the smallholder. No dairy breed has been so long developed on milking lines. If these points are considered there is no doubt but that the choice will fall on Ayrshires.

Practical and Economical Suggestions to balance Supply and Demand for Liquid Milk.

By JOHN JOYCE KEEVIL.

THE British Dairy Farmers' Association offering a prize for an essay on Dairy Farming, with payment to unsuccessful competitors for what is found useful in their contributions, should be of service at the present time when economic dairy farming has become a public necessity in every country, and also one of the most remunerative purposes into which the British farmer can put his brains and capital.

If above is admitted, it may be wise to consider whether "over-doing is undoing," and "more haste" may not sometimes mean "less speed."

Though for more than half a century I have been either a large producer or a distributor of dairy produce, I can give no scientific contribution to this subject; as for writing, unfortunately the practical daily occupation of a dairy farmer places him at a disadvantage with the scientist, whose daily practice it is to place ascertained facts in writing.

However, all will admit that the first consideration for the Dairy Farmer should be to make his business profitable so that he can provide for himself and his dependants. To do this he must produce *good quality* milk, not only with regard to chemical analysis, but also milk of good flavour and colour, if the maximum of success is to be obtained.

It is only the observant distributor or roundsman who knows how a bright, clean-flavoured, rich-coloured milk is appreciated, and how such milk increases sales. When the month of May comes, with all-grass milk, customers say to the milkman: "You are bringing lovely milk now, very different from that nasty oily-flavoured stuff I have been complaining about lately. Yes, I will have an extra pint."

Milk may be clean, of rich quality, well-cooled, pasteurised, delivered in glass bottles, and labelled "Grade A," but unless attention is paid to flavour and colour, demand will decrease and foreign powdered and condensed milks will be increasingly used.

The following facts may be worth considering:—Some years ago a friend of mine, one of the largest butter merchants in London, took over a suburban farm with large well-equipped cowsheds and 60 cows. The cows, in addition to good pasture, were twice daily fed on the most up-to-date rations of cake, meals, &c., as recommended by the best formulæ for milk-producing.

My friend's butter customers were mostly high-class West-end dairymen. Several of them asked as a favour for a churn or so twice daily of his farm milk for nursery and special customers who had been previously supplied with milk sent from the best country farmers the dairymen contracted with.

After a few months complaints began to come in that the babies did not do so well, that nurse did not like the flavour of the milk, that the invalids did not enjoy their glass of milk, &c. My friend then put his expert experience to work and found on enquiry that all his dairymen customers who were getting special *local* nursery milk from well-fed cows, veterinary inspected with perfect sheds, clean milkers, &c., and everything up to best Dairy Show standard, yet found that milk coming direct from country farms by rail, where the cows were fed on grass only during the summer, and hay and roots grown on farm in winter, was as much better as best cheddar cheese was better than second-class imported American.

My friend was eventually satisfied that the better flavoured milk produced on country cheesemaking pastures with good spring and river water for cows to drink would keep sweet longer and increase demand. For this reason he disposed of his farm to one of the largest London retail firms who expected to advertise its trade by specially prescribed feed for milk-producing on their own farms, but they soon found the boot was on the other foot and gave up the farm, returning to specially selected Wiltshire and Somersetshire farms.

It will be seen from above that my suggestion is that more attention should be given to producing milk of good flavour and colour which will increase demand, and that many of the artificial foods so much used for feeding cows are decreasing the demand for milk.

The question now is, how to get the desired colour and flavour in milk. With regard to colour, the Shorthorn (the dual purpose cow) is still leading with white milk, but individual cows turn up which give a rich yellow milk throughout the year, whatever the feed may be (and this where there is no taint of any other breed). By selection of males and females which show these tendencies, the colour of the milk could be established just as black, red, or white colours in cattle, or brown eggs in poultry.

It should not be forgotten how food affects colour of milk, both pastures and artificials, cake, &c., and that good colour increases demand. The flavour of milk, however, is of primary importance. The pasture cows are fed on influences this, as it does the flavour of cheese and butter, but there is little land that will not, if properly drained, limed, dressed with basic slag, &c., produce good flavour in milk.

What matters is £ s. d. as it affects the British dairy farmer. For this, shorten the months of winter feeding and reduce the acreage of haymaking one-third, by taking a lesson from sheep farmers, who find it pays to give their flocks only sufficient grazing space for the day, though the expense of hurdles, pitching new folds, and shepherd's wages are heavy; they know it would be disastrous if they were allowed to run over a new piece of roots, cabbage, tares, &c.—a month's feed would be ruined in two days.

This, of course, refers to plough land only, but on grass land any farmer of experience will have seen a flock of sheep put into large

fields full of the finest grass which would have kept the whole flock thriving for many weeks if in small enclosures, say 10 acres instead of 50. In a week the whole flock will have roamed over the whole 50 acres and fouled it, ceased to feed well, and stopped thriving. Had they been kept to 10 acres and changed every few days into another 10 acres, they would have gone ahead well, and come back to the first 10 acres finding it fresh and clean.

With milking cows a daily change is not required. A week or ten days is preferable. This leads to the main point I wish to emphasize. Grass alone should be the principal (though not the only) feed for milking cows for eight or even nine months in the year.

I know from practical experience that a 30-acre grass field shut up from 1st October will be far and away better value for a herd of 70 cows on 1st March—will produce richer, better flavoured, and more milk, and the cows will improve in condition on it through March and April better than any two months of the year, than they would on any 40 acres of hay made on the same quality land. The reason for this is that in two cases out of three hay is more or less damaged by rain (oftener more than less).

The properties in the grass which produce the flush of milk of fine flavour and colour are often either washed out by rain, or overdried by heating in rick, or too much sun-drying in making. Hay-made butter and cheese are inferior by 10s. to 20s. per cwt. against produce of cows fed on grass in April and May. Why cows thrive so well then is that the late grass grown in October and November does not run to seed, and is gradually seasoned by the light early frosts and cold winds, so that however severe the winter frosts are, there is sufficient life left to keep the grass green. There is always life in the centre of the plant to keep the whole from decay, and this well-matured grass has none of the bad effect on the cow that a sudden change from shed feeding to water meadows or new spring grass has.

In many seasons even part of February is not too early to begin grass feeding if sufficient has been reserved the previous autumn. Fields shut up should not be trespassed by man or beast. Rabbits, hares, partridges, pheasants, &c., should be shot down, roasted, and put into game pie, served hot, and if rooks and starlings are frequent visitors, shoot at them too.

When cows are moved to May pastures, shut up where they have been feeding for midsummer milk producing. Make hay as early as possible, and shut up some of the after-grass for September, October, and November milk-producing.

Heifers, in-calf cows, sheep, &c., should follow milking cows and feed down pastures close—once or, if possible, twice every year.

If this plan is wisely followed and farm is not over stocked, with two or three lbs. of cake per cow per day where pastures are poor, and a good supply of water, real "Grade A" milk will be regularly produced at a much less cost than in any other way. The cost of feeding each cow will be little more than the wages, rent, rates and taxes on two to three

and a half acres per cow. The best land may be £3 10s. per acre, which will keep one cow all the year round on two acres (£7). Poor land at £1 per acre will need four acres per cow per annum (£4), say, an annual cost of £5 10s. per cow, about 2s. 1½d. a week, or with cake, 2s. 6d.

I will here hazard the remark that the bulk of milk now coming to London is from the old cheesemaking countries of Wiltshire, Dorset, or Somerset, and that the majority of farmers buy little, if any, artificial feed.

For 55 years past I have had but little opportunity of going into these counties, but have recently spent some weeks in the West of England and find that the families of small farmers who looked after their cows in a practical way have increased their holdings from 50 to 500 or even to 1,000 acre farms. Some farmers are comfortably retired, many of whom I knew are gone "over the river" to the "living green fields," leaving to their children "a goodly heritage," and this in spite of bad prices for 30 years pre-war.

I am not advocating *entire* dependence on grass, hay, and roots produced on the farm, especially if land is poor.

With well-chosen cows an average of 700 gallons of milk per cow per year would be produced and, if market is not over-supplied, yearly contracts for milk on farm to be sold as liquid milk should average at least 1s. per gallon for a whole year's contract. In London and other big centres 6d. per quart would be willingly paid for good, rich, well-flavoured milk. This would leave 1s. per gallon for distribution and if the farmer has no expense, except putting his milk in distribution churns on farm, he will have the best end of the stick in £ s. d., with far and away the pleasantest life and not one-tenth of the retailer's worries, long hours, never ceasing rattling churns, arrival of station lorries at midnight, hum of pasteurising machinery, bottling machinery, and so on, together with the brain fag of managing and directing work. The farmer has, in fact, the silver-lined side of the cloud.

This, of course, is only my own opinion, but it is arrived at after for 55 years producing above the average farmer's quantity of milk, and also after having distributed a far larger amount than the average London individual retailer.

My principal object now is to impress upon both producer and retailer the fact, that by allowing milk to be retailed at less than an average of 6d. per quart all the year (it is far better to keep at one price all the time) pre-war ruinous prices for both farmer and retailer will follow. The demand should not be over-supplied, but surplus should be used, either at farm or in factory for butter, cheese, condensed milk, weaning calves, &c.

I would here emphasise it is clear that milk at prices fixed by N. F. Union of 1s. 5d. per gallon for October, November, and March, 1s. 8d. for December, January, and February, and 1s. for the summer six months shows such a large margin of profit over most other farm produce that corn farmers, and practically all other classes of farmers,

are rushing into milk-producing, and over-production is certain to follow unless caution is observed.

Again, our best scientific professors seem to be busy writing formula for forcing a larger flow of milk and prescribing unnatural chemical remedies, lime, &c., to replace the forced drain on the system of the cow. I would like to ask how far we can be certain that the digestive organs of the cow can extract the various nutritious qualities from the foods recommended !

Some 60 years ago, when *Bell's Weekly Messenger* was the leading agricultural paper, one of their best professional writers writing on this subject stated that turnips grown on the best sheep farms and containing 95 per cent. water and only 5 per cent. solids would fatten sheep and produce mutton of the finest quality. He also added that, with all our knowledge, we have never been able so cunningly to mix 95 per cent. water and 5 per cent. solids in a way that would even keep sheep alive. *Dame Nature*, he said, was so far in front of us that he feared she would never be caught up. Has she yet been ?

I appreciate the invaluable service our agricultural scientists have rendered, but from experience and observation I prefer to let *Dame Nature* do the dispensing of milk-producing foods.

Put it through her laboratory (Mother Earth's), and we can put our basic slag, lime, soot, and other fertilisers, about which our scientists know so well to advise us, on the poor or sour pastures, which will quickly do the digesting and return the cost with compound interest in clover and grass, so that our cows will fill the milk churns with pure, rich, fine-flavoured milk. This will increase the demand faster than any milk-advertising scheme.

"Good wine needs no bush." One of the foremost Essex milk producers, who many years since came from a rich Devonshire grass farm, took me over a 30-acre grass field on a low-rented, off lying clay farm. Two years previously he had dressed it with basic slag, leaving a piece some 40 feet wide through the centre. He had grown a heavy crop of hay the first year and since had grazed the land. The land he left (nearly two acres) was looking as poor and bad herbage as one could find. We crossed and recrossed the whole field and after doing so, I said to him, "Really, the 28 acres you dressed seem equal to the best Devon grazing land." He replied, "I have often thought the same, and my stock—colts, heifers, and milking-cows—do as well here as on the best land I ever had, also the improvement seems to continue even after three years."

I have myself had similar experience with each of the manures mentioned when farming some 300 acres and keeping over 100 milking cows. Two hundred acres of my farm were really good pasture, 16 acres ploughed land and about 100 acres poor well-drained clay.

My personal experience is as follows:—70 years since, my father liked always to save a few fields of after-grass for October for the milking cows and for 8 or 10 in-calf cows, which were kept out night and day through the winter, and given as much hay as they would

clear up twice daily. When the snow covered the grass they ate a lot, at other times very little or none. They always improved in condition. My father never reserved any fields for early spring feeding, but his nearest neighbour, who kept 60 cows, always kept a field for his milking cows to go in daily after January, when they calved and came into milk gradually up till 1st May, when summer cheese making began, with the whole 60 cows feeding on grass alone.

Now the result of the milking cows having run on good sized fields with the late summer and winter grown grass was, that the average two tons of spring cheese was increased by $\frac{1}{2}$ ton or more, *also* the whole $2\frac{1}{2}$ tons realised from 10s. to £1 per cwt. more than that of the adjoining equally good farmer did, who kept his cows in the yards on hay and gave them 2 to 3 lbs. linseed or other cake daily.

The cheese buyers' one answer to the neighbouring farmers, who complained they were not giving them so much money for cheese was, "Mr. ———'s cheese is good grass cheese, yours is only hay cheese, and I make a better profit on Mr. ———'s cheese than on yours." As far as I know only one farmer woke up and followed Mr. ———'s example. A brother-in-law of Mr. ———, keeping 80 cows and making cheese some 15 miles nearer London, went to a lot of expense to fence off about 35 acres near his homestead for reserving some late summer grass for his spring cheesemaking. He not only found equally good results in quality and price for cheese and butter, but that his cows did far better, and when turned into full run of summer pastures continued to improve in condition and experienced none of the ill effects usually seen when all-hay feed is suddenly changed to all-grass.

Though these two instances occurred between 1860 and 1869 I have perfect recollection of them, as I passed through one of the farms every week, and visited the other frequently through the year, often managing it while the owner was away on summer holiday, and on one occasion for some weeks when the whole of the 80 cows were down with a very severe attack of foot and mouth disease (of which, unfortunately, though only 22 years of age I had had a lot of experience).

We are all ready to say the English farmer is too slow to change when he has clear evidence an improved method can be adopted. I was tarred with the same brush. After the experience noted above, it would be expected when shortly afterwards I started with grass farm and about 40 cows I should have followed the plan I suggest for shortening winter feeding, but no, I just followed my predecessor on the farm, made all the hay possible, let cows have the run of the whole grass land, roaming over it all, treading away and fouling more than they consumed. Also I had to chain-harrow in the spring to tear out the old grass, that it might not choke the mowing machine or prevent the new grass coming through.

I might have gone on to this day, but 45 years ago I was suddenly brought up by a severe sunstroke, fortunately not to myself, but to my 300 acres of grass land. At the beginning of May all looked bright,

100 cows turned into good feed and "all seemed merry as a marriage bell." The sun shone every day till June when, with the help of a dry east wind the sunstroke came. The grass lay dead or dying, and one field after another that had been shut up for hay had to go for the cows, till I had only half the usual acreage left for hay. When the mowing machine went over it some of the already dried grass fell into the cracked earth, but we raked over the land where there was enough left to see anything and began on one of the bottoms prepared for five hayricks, hoping we might find enough hay to finish, perhaps, one rick. But no, there was only enough to build what looked like a flat-roofed bungalow, and still the sun kept shining while the brown fields turned nearly white, and the cows were only kept going by using up the old hay we had left. What little rain fell showed only the slightest results, and at the end of August there was not one green spot left. I went for a week with my family to Brighton, but nothing bright turned up, only brown pastures all the journey to look at.

It is a long lane that has no turning. One night while at Brighton we woke to hear the music of torrential rain with chorus of thunder peals, and plenty of electric light. A record rainfall was reported in the papers during our time at Brighton, and on returning home my foreman wanted to come and show me the fields. They were green, but no grass and every gust of wind brought down a lot of yellow leaves from the elm trees. It was the 8th of September. I said: "It is quite too late to get any grass this year; the land is stiff, hard and dry." But while we were yet speaking a sever thunderstorm drove us indoors and abundant rain followed with hot, close nights and hotter sunny days. This lasted till the beginning of October, with the result that a crop of 6 to 8 inches of grass grew on about 160 acres that the cows had not been into, while on the 140 acres they were feeding we had abundant grass growing faster than they could eat it. This continued till the middle of November; indeed, our best fields had far too much grass to turn the cows into. I was fortunate enough to have three good mowers who cut the grass and put it into small grass cocks. We carted 5 big one-horse loads every day, and 10 on Saturdays for Sundays' use. Mornings and evenings each cow had as much grass put in her manger as a man could carry, and they cleared it all up, besides what they got on fields during day. This went on till Christmas Eve, when we took our last 10 loads of grass in for their Christmas dinner, and on the day following begun on our "bungalow" hayrick. This, with brewers' grains and mangold, carried us on to 14th of February, when we intended mowing again, having well over 100 acres of October grass still on the land, but the weather was fine and dry for February, so we turned the cows into one fair-sized field. They increased in milk yield and improved in condition faster than I ever remember seeing milking cows do on grass, and were out till 4 p.m. every day, simply refusing to look at grains, &c., when brought in for milking. Before morning milking they had 2 lbs. of cake each, mixed with $\frac{1}{2}$ bushel of grains, and as one field after another was fed

out it was shut up for hay. Before March was out, the cows were in fields night and day, and the last of the October grass was finished up late in April.

We had a thumping crop of hay, plenty of grass for summer grazing, 5 good ricks, good crop of mangold, and banking account in better condition than ever before. As near as I could value it, £2,000 better than on previous 1st September.

At the present time it is obvious that the rush to make milk in every county will cause over-production and bring prices down so that milk-producing will be as bad, or worse, an outlook than growing wheat now is. The remedy is, cheaper and less milk-producing all round. This can be accomplished by keeping fewer cows and by growing practically all the milking cows' rations on the farm—by making earlier-cut, greener hay, keeping less acreage for hay, and depending on October and winter-grown grass for March and April for feeding milking cows, early summer-grown grass for late October, all November, and early December. The bulk of cows should be brought in before Christmas for winter and early summer milk-producing.

Avoid keeping cows in warm close sheds so that they may keep their coats till the natural time for shedding them, viz., early summer. Remember that nothing is more likely to bring lung trouble, tuberculosis, &c., than close overheated sheds, when cows have to face the cold biting winds, hail and snowstorms of spring and early summer months. Note that the cows that have lost their coats suffer terribly, milk yield decreases fast, and milk is often deficient in fat, with trouble when Inspector takes sample, while the cows that have been out in the open yards for at least a few hours every day for water and exercise (or better still if run on dry pastures near sheds) will keep on their thick coats and often jump and skip like lambs in cold blasts of storm, which will chill to the bone those cows that have shed their coats.

I have personally milked such cows shivering, cold as death, milk blue and icy, teats nearly freezing one's hands, and two to three quarts less than on the previous day, while on the same day cows that have been wintered out, with snow or hail on their backs, are as warm as toast, give good yield of milk and seem to enjoy the weather. Flies also terribly tease the short-coated cow.

I would advise open yards, open sheds 16 feet wide on north, east and west sides, and 3 feet to 4 feet wall and entrance door on south. Each yard to take not more than 10 cows, with 15 feet to 20 feet space between east and west sheds.

I note this week (20th November, 1923) in markets that I have attended, the average price of cows which had reached the end of their milking usefulness (though many were in better condition than can now be bought fresh-calved) only amounted to from £14 to £16 each, apparent weight up to 90 stone.

To replace these cows with fresh-calved cows of fair milking type, nothing can be bought at less than £40 to £50 (minus calf).

This is a loss of over £30 per cow, which has to be put on price of milk. As 10 per cent. has generally to be renewed every year, this shows a loss of over £300 yearly on every 100 milking cows (excluding loss by deaths). The remedy for this is to wean 10 per cent. or 12 per cent. calves yearly. Start the herd with best milking dairy cows, mainly Shorthorn, that can be got, and use the bulls with the best milk record pedigree that can be afforded and register the calves. After 5 years all calves will be eligible for Herd Book, and if good judgment has been used in ten years the herd will most likely have trebled in value, besides an extra £ for each calf sold each year. This means £50 per annum extra on 50 cows and 50 per cent. on £100 bull (and if you have not £100 to spare for bull borrow from your uncle at 4 per cent.).

Now for side lines for dairy farmers. Poultry, pigs, sheep, saddle horses, goats, dogs, pheasants (see farm at Peppard, near Reading, where I have seen thousands of pheasants' eggs and stock sent off all over the world). Fruit, flowers, bulbs, &c., of which we import hundreds of thousands pounds worth yearly (go to Cowley, Middlesex, for object lesson, where over 100 acres of chrysanthemums are grown and, I am told, £50,000 paid every year for labour). That on all dairy farms, side lines and by-products must have more attention is evident. Sheep must not be forgotten, when wild white or Dutch clover seeds are ripe. They are invaluable for carrying the seed. Shut up the best clover pasture for ten days when seed is ripening, and turn, let us say, 20 sheep on it for one hour every morning, spending the other 23 hours of the day on poorest pasture.

On most dairy farms there are many acres that could be doubled in value by this plan, and no "renovating mixture" can come near sheep for seeding and making milk pastures. Sheep can be bought to finish for butcher, and pay well, besides performing the above very useful purpose, or it is possible, in a year now and again, to find some sheep farmer who will pay and find cake for feed for 20 to 100 sheep for a few weeks.

With reference to ensilage, my experience is very limited, but from what I have seen on the farms of practical men, I believe it will be found of increasing value to milk-producers, principally from permanent grass land, which alone, in my opinion, will give the rich colouring and fine flavour to milk.

If the cost of labour, cultivation, manures, seeds, &c., expended to grow crop for ensilage on ploughed land was laid out on the second, third, and fourth-rate pastures they would soon be first-rate ones. For grass ensilage there will be no uncertainty of having seed in and waiting for weather to grow crop, but spring, summer, autumn, and winter, the first week of warm nights and days with rain, and your permanent grass will be there, anxious to grow at least a bite for your cattle, or, if shut up, two or three inches of feed for milking cows when required.

Again, ensilage can be made at the convenience of the farmer—a week or two earlier or later is no object.

For a practical dairy farm, 20 per cent. plough land for straw, roots, and side lines is necessary.

The important question of actual cost of production must be considered, but this varies on every farm, and in every season; and no separating costs of hay, labour, grazing, &c., can be of much use. There is only one practical way, viz., to start with careful valuation of all live and dead stock, manures, tillages, &c., and every year, at the same date, to revalue, then add increase or subtract decrease to previous year's valuation.

The total amount expended (from which any increase in valuation and total of sales from side lines has been deducted), is divided by total number of gallons of milk produced. This will obviously give the full profit of dairy farm, and side-line proceeds again be deducted to get at exact cost of production per gallon.

NOTE.—The year showing £2,000 profit was the only one in 10 years which paid any reasonable interest on capital or reward for myself. Foot and mouth disease (before the Government paid compensation) passing to the malignant form with 50 per cent. mortality (as described in Nelson's Encyclopædia), pneumonia, droughts, and the 1888 rain from May till September which ruined thousands, had to be negotiated. The pneumonia and foot and mouth disease, incidentally, led to the present "Contagious Diseases of Animals" Act, also to stopping the branding of cows with cow pox as being responsible for spreading scarlet fever.

Cows should carry their pedigree in their weather-proof winter jackets and robust constitutions, to which the name of "Milkmaid" or "Beefsteak" is equally appropriate.

There is *danger* in overtaxing the dairy cow's constitution by forcing excessive milk yield.

Attention should be called to the frequent onslaughts of the Daily Press on both farmers and distributors of milk, making their few, white, hard-earned hundreds into black profiteering. Is it done to take attention from the £8,000,000 recently paid for a few papers representing one class only? Has there been no profiteering to make this £8,000,000? What of the millionaire brewing "Bung Lords" and £5,000,000 for one Stout Brewery (Guinness's)? Malt and hops have produced Marquises, Viscounts, Lords, Baronets, &c., as thick as cows in the Dairy Show. Where are the millionaire milk producers? As befits their ancient and more laborious calling, they are content with "Sir" or "Mr." and a clear conscience!

THE MANUFACTURE OF BLUE-VEINED CHEESE.

By LEONARD J. LORD.

THE qualities looked for in a blue-veined cheese are such as make up the excellence of any prime cheese of the larger types, plus the presence of the recognised mould (a blue penicillium) well developed, which affects to a considerable extent the flavour of the finished product.

It follows that the principles of manufacture now pursued in both cases are substantially the same, except that in one case due allowance must be made for carrying out certain methods only so far that the growth of the mould in the interior of the cheese is not rendered difficult, and, while this cheese is maturing, to allow it to ripen under such conditions as to favour the development of the fungus insofar as it can be done without injuring the other good qualities of the cheese.

There are several varieties whose excellence is considered to have reached its highest point only when the blue mould is well distributed throughout the body of the cheese, and, as the writer will endeavour to point out, the successful manufacture of every one of them depends mainly upon the texture of the curd, by which, when outside conditions are favourable, the free growth of the mould is possible.

A secondary, though also important point, is that the surface of the cheese should be, not necessarily smooth, but well-knit and unbroken, as otherwise the cheese readily becomes a prey to either mites or putrefying organisms whose operations detract very much from its appearance and in the end render it unsound.

The term "richness" applied to a blue-veined cheese is not altogether related to its nutritive qualities, but rather to its special flavour and palatability, as, although a cheese rich in milk-fat is consequently superior in general excellence, very good "blue" cheeses, such as the Dorset "Blue-vinnies," can be made of partly skimmed milk and are distinctly more mellow and apparently much richer in fat than white-curd skim-milk cheeses of closer and firmer texture.

THE DESIRED TEXTURE.

The first point to bear in mind in the making of cheeses that are intended to mature with a well developed mould is that the curd at

the time of vatting must be tender, and in comparison with a curd such as that of Cheddar, it must be moist. The comparative moisture of curd can, when proper means are taken to measure it, be expressed in figures, but there is no quick method suitable to the working dairy of ascertaining the true moisture of a sample, so that only what is apparent to the senses of sight and touch can be taken into account. Suffice it, that in adopting any method of work which aims at producing a curd that will not knit too closely together—not in itself a difficult problem—special care must be taken both to conserve the moisture in the curd and to preserve its tenderness. Especially must this be borne in mind when Dorset cheese is being manufactured.

As a type, however, of English blue cheese, the Stilton is the standard variety.

Here the whole method of manufacture, if properly carried out, can but result in the vatting of a tender curd. A fairly sweet milk; a small measure of rennet; a moderately low temperature at setting; a dipped curd and a long draining period, are the main details of procedure. Furthermore, as a means of securing on open-textured cheese, as characterised by the rifts and fissures that appear in course of time in the interior, two curds of different age, temperature and acidity, are sometimes mixed together before filling into the cheese moulds, vats, or chessets, as they are variously called.

But when we come to consider cheese-making customs in other parts of the home country, and also abroad, we realise that the making of an excellent blue-veined cheese does not depend upon Stilton methods. The Blue Wensleydale cheese of North Yorkshire, considered of equal merit with the Stilton of the Midlands among certain epicures, and the less frequently spoken of but equally well esteemed blue Cheshires, go through widely different methods of manufacture and arrive at the same end. Both of these varieties are made from more acid milk; rennetted at a higher temperature, cut and stirred in the whey, and sometimes even given a low scald; finally, being put to press in no uncertain fashion. These proceedings would appal the cheesemaker whose theory and practice knew only the Stilton method.

Moreover, certain foreign blue varieties are similarly rennetted at the higher temperatures, and cut, stirred and vatted, as soon as the somewhat sloppy curd is firm enough to stand it.

In all cases the curd should be comparatively sweet when vatted, or put to press, as the case may be; otherwise a sour cheese may easily result. The acid flavour may, after a long period of curing, be considerably modified by the development of the mould, but a really first-class cheese is out of the question.

THE UNBROKEN SURFACE.

Here is a difficulty that, on the whole, is best surmounted by working upon the Stilton method, where the surface of an entirely

unpressed cheese that has settled together solely by reason of its own weight is closed and compacted by scraping frequently with a flat knife blade, so that the little unclosed cracks and interstices are filled with fine curd particles, provided by scraping and rubbing down the inequalities of the surface.

This method involves a considerable amount of personal attention to every single cheese in the first week or so after they are made, and we shall see that methods more economical of labour are the custom in making other English varieties.

The Stilton method finally results in a network of wrinkles forming on the face of the rind. Such a rough surface, however, forms happy hunting ground for the cheese-mite, much as the cloth-covered rind of the Wensleydale cheese gives them an equally good footing.

The last-mentioned variety has to be very carefully pressed on the second day if the surface is not properly compacted and smooth, as anything in the nature of a crack is soon pounced upon by the enemies already commented on, and the fact that a cloth bandage is pasted or sewn on the finished cheese has little beneficial effect in this direction. Indeed, the old custom of sewing on the cloth bandage so that the cheese shapes into somewhat of the appearance of a cylindrical Chinese lantern with corrugated sides, may result in opening wider any incipient surface cracks.

The wrinkled netted rind typical of the Stilton also develops in a cruder form on the Wensleydale cheeses, if they are cured unbandaged, as is customary with some makers. A smaller cheese of six to eight pounds weight is usually stocked for the Christmas trade by dairies interested in special market requirements.

Dorset cheeses, which are flat in shape, measuring about 10 inches across and 5 inches deep, and bandaged by means of a narrow cloth that overlaps by only a small margin, also mature with a netted rind on the flat sides, if properly made and stored.

A considerable amount of attention is necessary, especially if the store room is over-dry, to keep the cheese free from mites during the curing period.

Where stocks are kept for any length of time these minute animals always appear, especially if the cheese is one of the semi-hard type, such as we have under review. As soon as the rind is dry and well set they are likely to commence operations and make serious inroads, roughening and pitting the rind till quantities of debris accumulate and cover the cheese and shelves.

Frequent brushing of the cheeses, and sweeping of the shelves and floor with a soft brush, is necessary, and a periodical washing of the shelves is advisable, for if the mites once get well established, there is no proved method of getting rid of them that will not at the same time spoil the appearance, and consequent market value, of the cheese.

In fact, although certain conditions, such as a dry atmosphere and a moderate temperature, favour the inroads of the cheese-mite, this minute pest can be controlled within reasonable limits only if the curing rooms lend themselves to proper and convenient shelving, arranged so that they can be easily kept thoroughly brushed and clean. Washing shelves with a formalin solution is said to be something of a safeguard, but it cannot replace frequent brushing and turning of the cheeses.

Certain protective methods against the entry of destructive agents are used with the Italian variety Gorgonzola, the rind of the cheese being coated with a prepared plaster. As a means of repulsing slime organisms this method of protection is only partially successful. These have not unfrequently gained an entry by some weak or broken spot, and continued their destructive work after being hidden from sight by the plaster coat.

Roquefort, the best known blue-veined variety of French cheeses, was originally made from sheep's milk, but is manufactured now from cow's milk, both in the old-established districts of France and also in Denmark, to supply a large export trade to this country.

This cheese, matured under very humid conditions, keeps too slimy on the surface to develop a definite rind. Previous to marketing it is scraped, washed, and then wrapped in tin-foil.

Surface salting the cheeses, when freshly made, has some deterrent effect on the growth of slime fungi, but salting a cheese in any form does not check the growth of the blue mould. Farm-made Wensleydale cheeses are still floated in brine by the old-style makers, but mixing dry salt with the curd before vating is more general with the makers of English varieties. Two to three per cent. of salt is the usual proportion, the larger quantities with a curd wetter than usual.

ENCOURAGING THE GROWTH OF MOULD.

The interior of almost any unpressed or lightly pressed semi-hard cheese will become blue-veined in course of time, if otherwise sound and not the prey of putrefying organisms, which, having free access to the surface of the cheese, will readily cause early decay if the cheese becomes damaged, or is kept under conditions of humidity and temperature that favour their operations.

Generally speaking, cheeses made and stored under suitable conditions for the purpose take about four months to show blue mould established in the interior. It will take longer for a Cheshire cheese to become streaked, or rather dotted, with the blue fungus, but this variety of cheese is closely pressed, and crumbly, rather than flaky in texture as is the typical English blue cheese.

At vating all the curds of the English varieties are fairly soft and friable, containing a fair amount of moisture, not visible as free whey,

though the Wensleydale and Dorset cheeses run whey freely as soon as the slightest pressure is applied. There is no point in stating what percentage of moisture curd should contain at this stage, as there is no simple test that will indicate it at the time except the maker's experience.

The Dorset Vinny, being a skim-milk cheese, requires to be made of a curd that contains a high proportion of moisture in order that it shall not become unduly dry in the course of ripening. Dryness is always sufficiently noticeable in such a cheese owing to the low percentage of fat in its composition.

Loss of moisture is part of the process of ripening, and it may amount to as much as 20 per cent. of the original weight of a small cheese, but under proper storage conditions this inevitable loss is gradual.

The consequent gradual shrinkage of the cheese, built up as it should be of irregular-shaped pieces of curd that have never thoroughly joined together, finally results in the mould beginning to grow, not—as might be supposed an air-loving organism would do—from the outside, but from the heart of the cheese, the fissures in which the fungus grows and spreads developing in a star-like fashion like the shake in a log of timber.

In course of time the body of the cheese opens up in all directions, so that little portions of cheese, of varying sizes and shapes, partially separate from each other to a sufficient extent to allow the mould to penetrate and fill all the minute crevices thus brought about.

Percival & Mason (a) state that as the bacteria engaged in the earlier stages in ripening the curd decline in numbers, the moulds and yeasts increase and the change in the proportion of these to the former becomes marked after about 30 to 40 days from manufacture.

Although several species of fungi are found on the rind or coat of the cheese, they are said to take little or no part in the ripening process, but that the fungus mycelium filling the crevices in the cheese is that of *Penicillium Glaucum*. It spreads throughout and upon the surfaces of the crevices without penetrating to any considerable depth into the curd, and the blue-green colour of the fungus appears only when the conidia, or spore-fruits, begin to form.

They also found a species of yeast—torula—to be abundant in the cheese at all ages, and this is considered to play a definite part in the final ripening of the cheese—Stilton—upon which their investigations were carried out.

Blue-cheese makers in this country would welcome experiments conducted by such authoritative experts on the advisability of using the prepared moulds which are now upon the market for the purpose of ripening a cheese "blue" in a shorter time. Whether such a practice is desirable would appear to depend very much upon whether it is carried out in the best manner, whatever that may be. A small

portion of the prepared mould sometimes imparts an earthy taste to the cheese in a very short time, and this long before there is any sign of the fungus mycelium. Perhaps the earthy taste is simply the mould flavour too strongly developed, or maybe it requires the modification that in the ordinary course would be derived from the results of bacterial fermentations taking place in the ripening curd prior to the mould beginning to establish itself.

The satisfactory development of the mould, however, depends not only upon time, but upon the surrounding conditions, as may now be considered.

If the store room is too warm, the body of the cheese packs closer and loss of moisture may be accompanied by loss of fat, much to the detriment of the cheese in quality and richness.

In any attempt to cool and ventilate the store room, care must be taken that the cheeses are not exposed to a cold draught of air, as this will result in extreme shrinkage and undue loss of weight. It may also lead to a dry texture at the finish, and very probably be the cause of surface cracks that in warm weather form tempting spots upon which the cheese fly delights to lay her eggs. For this latter reason the room needs to be dark, or so designed and fitted up—*e.g.*, by means of window shutters—that it may be easily darkened. Flies like the sunlight, which also tends to make the room both too warm and dry.

The room, then, should be cool, not at any time at a higher temperature than 64 or 65 degrees Fahr., and the air must be moist.

This most important point was well considered in a series of experiments (*b*) by which it was concluded that a relative humidity of 85 to 90 per cent. is the requisite range.

A hygrometer hung upon the wall would—at 65 deg. Fahr.—indicate this amount of moisture by the wet bulb being only 1 degree lower in temperature than the dry bulb—*e.g.*, if the difference is more than 2 degrees—a lower relative humidity—the air of the room is dryer than is desirable.

It was found that if the relative humidity became too high, heavy coverings of surface slime accumulated on the cheeses, and had to be periodically removed. If there were a crevice or crack on the surface of the cheese the slime organisms gained an entry and proceeded to establish themselves in the interior, eventually rotting the cheese.

On the other hand they found that, with a low relative humidity, the cheese became hard, dry and cracked, and serious loss of weight resulted.

This cracking is of course aggravated by draughts in a badly constructed or insufficiently sheltered store room, and the cheese becomes the prey of myriads of cheese-mites, which seem to revel in a cool dry situation.

COMPARATIVE TABLE OF FIGURES RELATING TO MANUFACTURE OF VARIOUS KINDS OF BLUE-VEINED CHEESE (Ref. (c)).
(In Terms of 100 lbs. of Milk.)

Item on Record.	Stilton. Factory.	Cheshire. Factory.	Wensleydale.		Dorset. Factory.	Gorgonzola.	Roquefort.
			Farm.	Factory.			
Acidity of Milk ...	.19	.20	.20	.22	.24	.25 to .30	.23
Rennet Test ... mins.	27'	20'	26'	24'	—	—	—
Quantity of Rennet ...	2 drs.	3 drs.	2 drs.	3 drs.	3 drs.	varied	10-12 c.c.
Temp. of Setting ... Fahr.	83°	84°	82°	80°	80°	86°	83°
Time to Cutting ... mins.	90'	60'	90'	60'	90'	varied	90'
Character of Cut ...	Ladled	$\frac{3}{4}$ " cube	$\frac{3}{4}$ " cube	$\frac{1}{2}$ " cube	$\frac{1}{2}$ " cube	$\frac{1}{2}$ " cube	$\frac{1}{2}$ " cube
Stirring ... mins.	none	20'	5'	20'	10'	slight	dipped out to drain in the vat.
Time in Whey ... hrs.	2 hrs.	1 $\frac{1}{2}$ hrs.	3 hrs.	2 hrs.	1 hr.	dipped soon	
Time Draining ... hrs.	8 hrs.	1 hr.	4 hrs.	3 hrs.	3 hrs.	30 mins.	
Salting ... ozs.	3 ozs.	3 $\frac{1}{2}$ ozs.	brine.	4 $\frac{1}{2}$ ozs.	5 ozs.	to taste	surface rubbed.
Acid at Vatting ... %	.40 to .50	.30	.35	.40	.60	—	—

It must be understood that, in practice, the details of operations are varied to meet requirements—such as may be indicated by the state of the milk, the weather and other circumstances that are not directly under the control of the cheese-maker. Given the first acidity as a desirable standard, the details that follow it, as shown in this table, should apply in the usual course of work.

If we select a first class cheese of every one of the varieties shown in the table, they should exhibit a texture and general appearance together with a flavour each peculiar to its kind.

A true Stilton rind cannot be mistaken and, when the cheese is cut in two, the blue veins should be seen radiating from the heart of it in zig-zag streaks. The cheese should tend to disclose a flaky make-up.

The blue Cheshire is of close fine texture, inclined to crumble in tiny grains, with the blue mould dotted about all over the cut surface.

The Wensleydale should approximate to the Stilton, but has not a similar appearance from the outside, being, as already stated, a bandaged cheese. It is made "tall" like the last named, and also flat shaped, both forms ranging between eight and eighteen pounds in weight. The flakiness of texture is not so marked as in the Stilton, and the blue veins are not infrequently more closely and generally distributed. There is a slight difference in flavour, not to be described, but recognised by the epicure. The old style of bandaging, formerly characteristic of this cheese, is fast falling into disuse, and a bag of loosely woven cotton material is now pressed on to the cheese.

The Dorset is a flat cheese, naturally dryer than any of the foregoing, inclined to be crumbly, with the mould well distributed.

Of the foreign varieties, the Gorgonzola is usually indicated by a thin plaster rind, the curd is waxy in appearance and also well-marbled with blue veins. There are also indications of the cheese having been pierced in various directions, with a view to encouraging the growth of the mould, which may be seen by the blue lines that are obviously the result of such operations.

The Roquefort shows the traces of similar tactics, but has an exceedingly thin rind and is wrapped in "silver paper" or tin-foil. This cheese has a somewhat mealy texture, with the mould very finely marbled in the soft moist body of the cheese.

Each of the named foreign varieties has a specific flavour. The first may be described as nutty, while the presence in the last named of a faint peppery tang is said to indicate that sheep's milk has been used.

All these variations in type are the result of working operations interacting one upon another, and upon different bases, as, for instance, within limits, a good cheese of its kind may be made of either sweet or acid milk, but not upon quite the same method of work.

A comparison of the two Wensleydale columns in the table of figures will perhaps better indicate how this may be.

The manufacture of blue-veined cheeses on the farm is not likely to extend in these days now that facilities for marketing long-distance milk are well established, but for surplus milk in districts where there

is a local demand they form a good variant to the large heavy-pressed cheese of the Cheddar type.

Generally speaking, the market price of blue cheese, and also of the same cheese while still in the white curd stage, is higher than that of Cheddar—taken as a standard—and on the whole gives better returns, there being a heavier yield of curd.

In any case the technique of manufacture is no more intricate, and as a business proposition may well merit consideration.

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BLUE ALBION CATTLE.

By ROBERT LONG.

If fancy and fashion can be combined with utility, a great stimulus is given to one of the chief delights in farming, namely, breeding a herd of rent-paying cattle. Such is this newly revived Blue breed—the indigenous cattle of the Derbyshire Hills. In most of the old books concerning cattle will be found allusions to the Blue cattle of Derbyshire. It was not, however, until 1916 that the first steps were taken to protect and exploit this breed of cattle. In that year, a meeting of breeders interested was held, and it was resolved to get together particulars of the breed, and to keep some record of the numerous Blue cattle scattered all over the country.

This proved, however, rather a difficult task, as although the breeders realized that they were handling an exceptionally good type of “dual purpose” animal, the majority of them were loth to extend their activities, fearing, perhaps, that the cattle would pass out of their hands.

This state of affairs existed up to the end of 1920, when some of the more progressive of the breeders realized that it would be necessary to form a Society and establish an official Herd Book, if their cattle were to be developed along the right lines. Accordingly, a meeting was called and the Society came into being early in January, 1921.

Visitors to the Royal Show at Derby in 1921 saw the debut of the Blue Albion cattle. Already in 24 counties, nearly 300 members are breeding these attractive cattle.

With the Live Stock Improvement Scheme and the formation of the Peak Milk Recording Society inciting to better yields, the farmers of the Peak district of Derbyshire, who for generations had loved their Blue Roans, were all roped in to the Blue Albion Cattle Society. Rowsley was first made its headquarters, which have since been transferred to Derby, under the care of Mr. Sydney Clarke, Secretary.

During the year just passed the breed has had classes at 26 Shows, including the Royal at Newcastle, where the entries were particularly good, also at the Great Yorkshire, Essex, Staffordshire, and Hertfordshire.

It was much to be regretted that at the London Dairy Show Foot and Mouth Disease restrictions prevented 14 out of the 16 entries from attending. However, it may be of interest to prospective Blue Albion breeders to know that six of the missing entries were giving over seven gallons of milk a day, with the butter-fat percentage well over 4 per cent. In spite of this misfortune, the two exhibits created a large amount of interest and several converts were enrolled as breeders.

**CLIFTONTHORPE SALLY.**

First and Champion, Breed Show and Sale, Derby, 1923. First Prize, Derby County Show, 1923.
Second Prize, Ashby-de-la-Zouch, 1923. Third Prize, Ashby-de-la-Zouch (Open Class), 1923.

For the 1924 Show season, classes have been arranged, so far, at the Royal, Salop and West Midland, Great Yorkshire, Royal Lancashire, Essex, Hertfordshire, Derbyshire, and Tring Shows.

Exhibitors of the breed are asked by the public: "What are the specialities of the new variety?" First, it claims foremost place amongst all breeds for economic value; secondly, it is capable of yielding large quantities of rich milk without expensive feeding; and thirdly, it fattens readily into a good butcher's beast.

Blue Albions will always attract attention if only for their appearance, but they were first and foremost profit-makers in the hands of the working farmers of Derbyshire before they charmed the lovers of good cattle. The reason they have not been more generally known is that until the year 1916 no one connected with the breeding of them ever thought of the great possibilities open to the breed beyond their native place.

Any one familiar with the Peak District can testify to the hardness of the Blue Albions. Meteorological records show that the Peak District in winter is one of the coldest inhabited places in Britain, colder even than Aberdeen and the Orkneys. Attempts to establish herds of pedigree cattle of other breeds have been failures; only the



BRADBOURNE GOALKEEPER.

First and Champion, Breed Show and Sale, 1921 and 1923. Second Prize, R.A.S.E., Derby, 1921. First Prize, R.A.S.E., Cambridge, 1922. First Prize, Inxton, 1922. Second Prize, Breed Show and Sale, 1922. First Prize, R.A.S.E., Newcastle, 1923. Third Prize, Essex, 1923. Third Prize, Derby County Show, 1923.

very hardiest could winter out on the Derbyshire hill farms at over 1,000 feet elevation with any hope of profit. A Wiltshire breeder of Blue Albions in 1922 tested their constitution by taking a bunch of heifers up to a Down farm, situated at an elevation of 1,200 feet, which, from local repute, was only fit for the hardiest cattle, and would starve many, however well they were bred. From the first week in October until the third week in March the heifers had nothing but what they could pull off the downs. From then till the middle of May they had 3 lbs. each of cotton cake. "No cattle from the Highlands could have wintered better" was the remark of a West Highlander who saw them. As to milk yields, no attempts have as yet been made by the Society to attain phenomenal yields, but in their native county, which is wholly devoted to milk production, they have held their own with other breeds more richly fed and pampered.

Their milk is decidedly richer than that produced by the average commercial cow. In the Peak District heavy cake and corn feeding is not practised, the bulk of the winter food being hay, and, as may be imagined, rich pastures are not found at high elevations. Nevertheless, 1,000 gallon yields are common in the Blue herds of the Peak, one cow heading the records of the Peak Milk Recording Society in 1921 with a total of 12,246 lbs.

A Blue Albion cow in another Society yielded 14,950 lbs. in 1922.

In the recording year ending 30th September, 1923, eleven cows and six heifers of the breed belonging to a member of the Essex Milk Recording Society averaged 8,944 lbs., and when tested for butter-fat averaged 4.7 per cent. in the evening and 3.78 per cent. on the morning following.

I have to acknowledge my thanks to the Secretary of the Society for much of my information.

CAN THE ORDINARY FARMER PRODUCE CLEAN MILK?

By W. A. HOY.

The National Institute for Research in Dairying.

FOREWORD.

THE material for this paper is contained in two articles which appeared in "Modern Farming," October, 1921, and July, 1922.

We are frequently asked whether it is or is not possible to produce "clean" milk in ordinary cowsheds. The answer to this question does not immediately concern the cowshed, but it deals primarily with the health of the cows, the knowledge of the workers, and the apparatus with which the workers are supplied to do their work. If, however, these conditions are satisfactory and the following procedure is adopted, there is no reason why the answer should not be in the affirmative.

Given a good and abundant supply of water, steam and the right kind of labour, it is possible to produce milk of a high degree of cleanliness, even in very unfavourable surroundings, though the amount of labour and care which are then involved is such that it becomes a very laborious business to maintain the necessary standard.

In order to minimise this labour, every effort should be made to provide light and sanitary conditions which tend to keep the cows in a cleanly state. The structural alterations to buildings which are required for these purposes need not involve any great outlay of capital.

LACK OF LIGHT.

One of the most serious faults of the ordinary cowshed is the lack of light, which is absolutely essential for the cleanliness and health of the cows. It is of the greatest importance that plenty of light shall be thrown upon the hindquarters of the cow, as it is not possible to wash away dirt if you cannot see where the dirt is. In the early hours of the winter mornings the average paraffin lamp is quite inadequate. This difficulty can be completely overcome by the use of one or more of the incandescent petrol vapour lamps, which are efficient and economical.

STANDINGS AND DRAINAGE.

In those sheds in which the cows lie dirty it is necessary to make such alterations that the cows do not lie in their own dung. This may involve the lowering of existing mangers, or the raising and shortening of the standings, or all three. An impervious floor behind the cows which provides free drainage to the outside of the shed is very necessary.

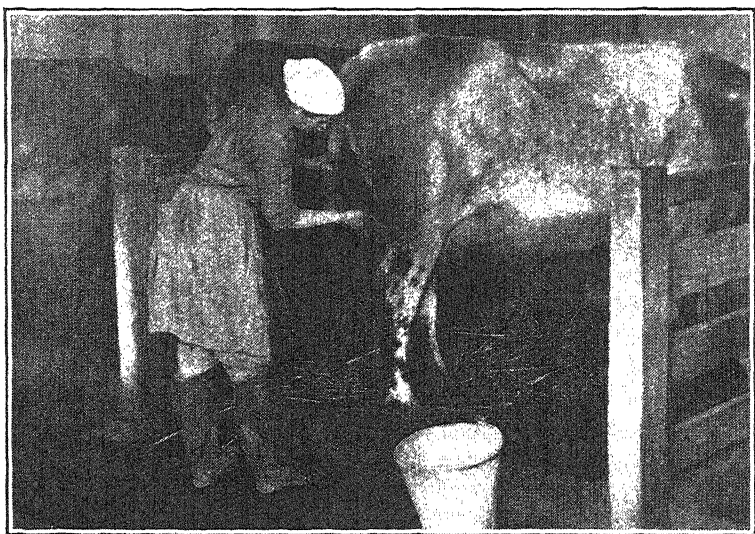
CLEANLINESS OF THE COWSHED.

The ceiling or roof and the upper part of the walls can generally be kept in good condition by the use of a lime spray. The lower part of the walls should be washed where possible, or scraped and lime-washed as often as may be necessary.

Since a liberal supply of water is needed for cleaning the cows and cowshed, it saves much labour to lead water to the cowshed wherever this is at all possible.

ROUTINE FOR CLEAN MILKING.

(1) *Remove the Dung.*—The dung which has accumulated must be removed from the cowshed with as little disturbance of the unsoiled



bedding as possible, and be taken to such a distance that it is not possible for contamination of the milk to take place.

(2) *Clean the Cow.*—Once the animal has been got into a cleanly state the time needed to keep her clean is very small. A large bucket of water, a currycomb, a good brush, and a piece of cloth are required. The udder, that part of the belly just in front of the udder, the flanks and tail of the cow must be brushed with a wet brush until all dirt and dung are removed, the currycomb being used when found necessary. The cow may then be rubbed down with the cloth, which has been wrung out as dry as possible.

(3) The teats and lower part of the udder, having been freed from dirt by the preliminary washing, must now be vigorously wiped with another piece of clean absorbent cloth which, with a second pail

containing clean water, should be reserved solely for this purpose. The udder cloth must be rinsed clean and wrung out between the wiping of each cow and the water must be frequently changed.

If the long hairs about the udder be clipped at intervals by means of clippers the work is greatly facilitated.

Too much emphasis cannot be laid upon the final wiping of the udder and teats, and suitable cloths (preferably turkish towelling), together with clean pails, should constitute an essential part of the equipment.

THE ACT OF MILKING.

The milker must then wash his hands, put on a clean overall, and, being provided with a clean scrubbed milking stool, proceed to milk into some form of covered bucket which has been sterilised by steam. Milking must be dry-handed, and the first two squirts of milk from each teat should be rejected in order to wash out the teat canal. It is of great importance that any operation likely to produce dust, such as feeding with dusty hay or the dry-grooming of cows, be avoided either just before or during the milking period.

If possible, the milk from each cow should be removed from the cowshed immediately and strained, but if not, it may be weighed in the shed and collected in a steamed carrying pail provided with a lid, which should only be taken off when milk is being poured in and immediately replaced. All pouring of milk from one vessel to another in the cowshed should be avoided as far as possible.

HANDLING OF THE MILK.

The milk on removal from the cowshed must be strained and cooled without delay. The best type of strainer is that which is fitted with a cotton wool disc, which is discarded after each milking. Care should be taken to see that the disc is intact and that it is placed securely in position. The quality of the work in the cowshed may be judged to some extent by the condition of the disc, which should be preserved for the inspection of the milker. When cooling, it is important to see, by the use of a thermometer, that the temperature of the milk is brought as low as possible.

The lids should be promptly put on the churns after they have been filled. The place in which the milk is cooled should be kept scrupulously clean, free from dust and flies. It should be well lighted, easy to clean, and provided with a supply of water for washing away any milk spilt during handling. It is a good practice to keep the floor wet during cooling, and only those concerned with the handling of the milk should be allowed access.

WASHING THE UTENSILS.

All utensils, cooler, &c., must be washed thoroughly and steamed between each milking.

(1) Sometimes it is not convenient to proceed immediately after milking with the whole of this work, but it is essential that everything

which has been in contact with the milk shall be washed in cold water as soon as milking has ceased.

(2) The next step is to wash thoroughly in hot water, to which a little soda may be added. Suitable brushes are necessary for scrubbing the inside of covered pails and the cooler, and if a pipe is used in order to lead the milk from an outside receiver to the cooler, then a special brush is necessary for cleaning it.

(3) If soda or any cleaning agent has been used for cleaning the utensils, then it is absolutely essential that the washing water be removed by rinsing the utensils in clean cold water.

STEAM STERILISATION.

After rinsing, the utensils will be ready for steaming. It is important to point out that it is not possible to clean a milk vessel adequately either by steam alone or by washing alone. The one is complementary to the other, and both are essential. A thoroughly washed, sterilised and dry utensil is the ideal which must be aimed at.

The sources of steam may be varied according to the quantity of milk to be handled and the conditions on the farm. Three sources which have been adopted on different farms are here described.

(1) *Pressure Boiler*.—If a pressure boiler can be utilised, then the steam should be passed into a tank in which all the utensils are placed and subjected to a temperature of 210°F . for five minutes.

The tank should have a close-fitting lid, a rack of iron or wood within a few inches of the bottom, and a 1-inch hole at the lowest point to allow for drainage.

The steaming period will depend on the amount of steam available, the size of the tank and its contents; but a thermometer fitted in that part of the tank which is the last heated, will indicate the temperatures attained. If provision is made for a steaming jet it will be found useful for odd churns, and a minimum period of three minutes will be necessary for the sterilisation of any utensil by this method.

(2) *The Farm Copper or Boiler*.—The ordinary farm copper may be utilised for steam sterilisation in the following way:—A hole, about $2\frac{1}{2}$ inches in diameter, is cut in the copper lid, a piece of metal tubing (a tin with the bottom removed will suffice) is fixed in the hole in such a way that it projects about three inches, and strips of wood half an inch thick are arranged to prevent the churns from resting directly on the lid. Over this tube, churns and small-topped pails may be steamed. A box or tank for utensils which cannot be steamed over the steam outlet will be required; the bottom of the box must be perforated with one inch holes and placed directly on the copper in such a manner that the steam from the boiling water in the copper passes up into the tank.

(3) *Simple Steam Steriliser*.—The simple steam steriliser is of value on farms which do not handle the milk of more than about 20 cows at any one time. It is of special value when no other source of steam is

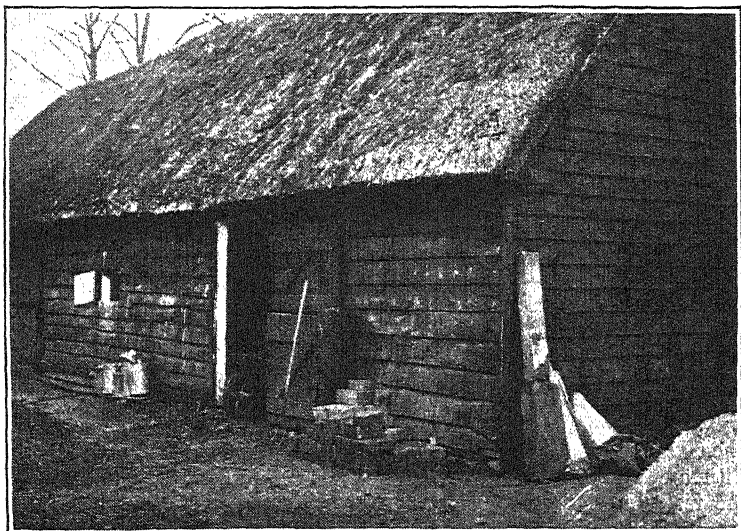
The method of utilising the steaming tank is similar to that which has been described already. Ten-gallon churns will require to be steamed for five minutes and 17-gallon churns for eight minutes when the source of heat is sufficient to produce steam at 210°F. from a gallon of water within ten minutes of its first application and the churns are covered.

The details which have been outlined are the essential points in the production of clean milk, and the results obtained on any one farm will be controlled, not so much by the buildings in which the work is done, as by the efficiency of the workers themselves.

Many practical illustrations of clean milk production in ordinary cowsheds now exist in this country, and valuable information can be obtained by a study of the results of the clean milk competitions which have been carried out within the last two or three years.

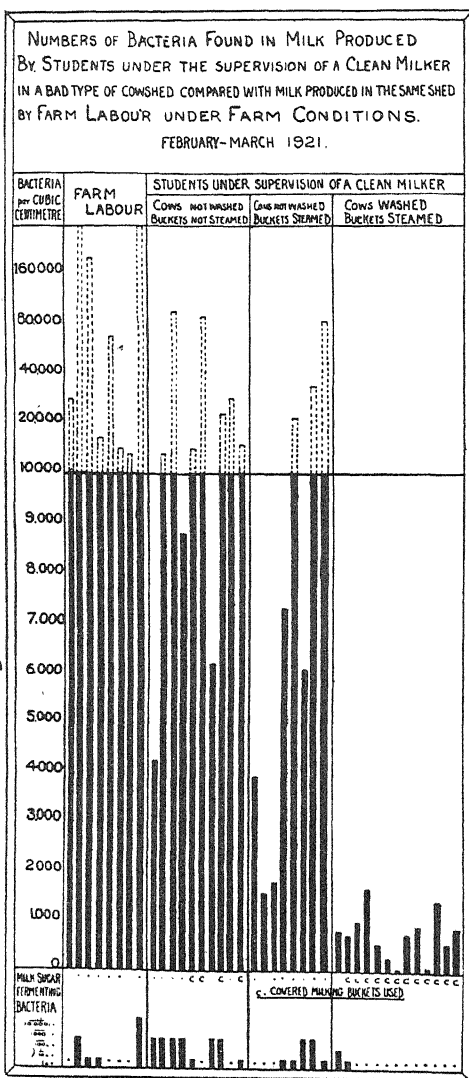
For the purpose of this paper, let us examine a concrete case in which numerous bacteriological examinations were possible. The work was carried out in a cobwebby, unevenly cobbled, badly lit shed by a class of students who were studying the methods of clean milk production. The photograph gives an outside view of this shed. There was no dairy, but an abundant supply of water could be obtained from a hand pump in the yard.

The farm workers washed their utensils with cold water from the pump, and stored them in the position shown in the photograph. The class adopted similar methods in their first series of experiments. In the second and third series a simple steam steriliser was brought



into the cowshed. The utensils were steamed just before milking, and hot water taken from the steamer was used to assist the washing up after the milking was finished. In the intervals between milking, the class stored their utensils as shown in the photograph. The work was being done under considerable disadvantages.

The results obtained are shown in the chart, which is based on the fact that the highest standard for commercial clean milk is 10,000 colonies of bacteria in 1 c.c. (18 drops) of milk. This standard has been accepted, and all those samples which gave counts above this limit have been marked in a different type. As additional evidence of the cleanliness or otherwise of the milk, each sample was also examined for the presence or absence of bacteria capable of producing acid and gas in a medium containing milk sugar. The presence of such bacteria is an indication of added dirt. The results of these tests are recorded at the bottom of the chart.



It is clear that the farm workers, though their skill in milking was good, failed to produce clean milk. The class, in the course of their studies of the effects of different methods of cleanliness upon the ultimate state of the milk, carried out three different sets of experiments.

In the first, their methods were similar to those of the farm workers, and the chart shows that the results were not satisfactory. In the

washed. An improvement in the cleanliness of the milk was effected. In the third, the cows were washed and the utensils washed and steamed. Under these circumstances milk of high cleanliness was obtained. It was proved, therefore, that it was possible to produce clean milk even under very disadvantageous sanitary conditions.

The result depended upon several factors. The most important of these, without which the rest would have been of no avail, was the knowledge and enthusiasm of the clean milker who was in charge of the class, supported by the intelligent interest of the members of the class.

The truth of this assertion is well illustrated by a comparison of the results obtained by the class when the cows were washed and the buckets steamed, and the milking was carried out in an insanitary cowshed, with the milk from a farm on which great pains have been taken to provide appliances for clean milking. On this farm the cowsheds are very good, and there is abundant light and ventilation. A good water supply and steam are readily available. The results obtained on this farm are shown in the table, in comparison with those which the class effected at the same period of the year in an insanitary cowshed.

NUMBERS OF BACTERIA FOUND IN ONE CUBIC CENTIMETRE OF MILK
produced by

Clean Milk Class—Feb.-March. Milk 4 to 8 hours old when tested.		Good Type Farm—Feb.-May. Milk 3 hours old when tested.	
1,710	—	160,000	*1/10,000 c.c.
1,430	—	105,000	—
1,000	—	18,400	—
920	—	13,000	—
870	—	10,500	—
850	*1/10 c.c.	10,400	*1/10 c.c.
770	—	6,500	—
730	*1 c.c.	4,070	—
530	—	3,240	—
510	—	2,750	—
280	—	1,370	—
80	—	350	—
20	—	160	—

* Milk sugar fermenting bacteria found.

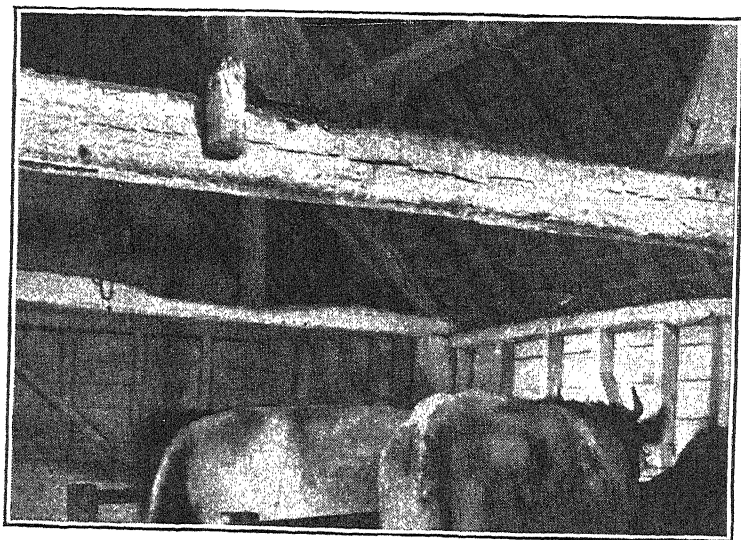
It is clear that the class results were very much better than those obtained on the good farm. The difference was due to a lack of complete knowledge or of real interest in the business in hand on the part of the workers at the farm. The clean milker in charge of the class, on the other hand, was interested in the work and had had three years' intelligent experience, and had studied the pitfalls which may occur as the result of errors either in the technique of cleanliness or of steaming. Some one of a similar type is essential on all farms which set out to improve the cleanliness of their milk supply.

Stress is laid upon this factor because of its importance; because, also, of the difficulty which has been encountered on most farms in

The intelligent worker will endeavour to attain such improvements as are possible, but he will not despair if the essentials which have been outlined are given to him.

It is surprising how much can be done to improve the conditions in a cowshed which at first sight does not appear to be promising.

That cowshed, of which a picture has been given, is now in a very different state from that which existed at the time when the photograph was taken. Yet the alterations have not been great. The floor has been relaid and proper drainage introduced. Partitions between the cows have been erected, and the walls and thatched ceiling have been cleaned down and lime washed. The sense of cleanliness and light which has thus been introduced is astonishing.



An old Shed after cleaning the roof.

A dairy of a simple kind has been created out of a small calf shed by cleaning it up, putting in a concrete floor, and lime washing the walls and ceiling. Two large baths are used for washing the apparatus and utensils, and a simple steam steriliser for steaming.

Although it is true that much may be done by the good worker under very unsatisfactory conditions, it must be remembered that it is difficult to keep up enthusiasm for three hundred and sixty-five days in the year, if all possible steps are not taken to improve the conditions as opportunity occurs.

If further information concerning the production of clean milk be desired, it may be obtained from the National Institute for Research in Dairying, Shinfield, near Reading.

An Explanation of the Present Award of Points in the Milking Trials at the London Dairy Show.

BY T. J. DRAKELEY, PH.D., M.Sc., F.I.C., F.C.S., M.I.M.E.

(Consulting Chemist to the Association).

THE award of points in the Milking Trials is at present made according to the following scheme:—

- A.—One point for every ten days since calving, deducting the first forty days, with a maximum of twelve points.
- B.—One point for every pound of milk, taking the average of two days' yield.
- C.—Twenty points for every pound of butter-fat produced.
- D.—Four points for every pound of "solids-not-fat";

whereas:—

- E.—Ten points each time the fat is below 3 per cent.;
- F.—Ten points each time the "solids-not-fat" fall below 8·5 per cent.;

are the deductions made for milk of inferior quality.

This explanation deals principally with sections B, C, and D, which have been in operation since 1887, and about which considerable discussion has occurred in recent years. It is hoped to deal with the remaining sections, particularly A, in a future article. It will be observed that, according to the above arrangement, 100 pounds of milk which just attain the Government standard would be awarded the following points:—

For weight of milk	...	...	100 points.	
For 3 pounds of fat	...	...	60	"
For 8·5 pounds of "solids-not-fat"	...	...	34	"
				} 94 points.

Hence, 100 points are awarded for quantity, and approximately 100 for quality. This arrangement of total points for quantity and quality seems admirable; and general approval of such an award has been expressed. The assumption, however, that the fat in the milk is one and three quarter times as valuable as the "solids-not-fat" may appear to give too great a predominance to the fat; and

certain members have been keenly dissatisfied with the awards specified in sections B and C. An attempt to justify, or at least explain, the award therefore seems desirable.

The award of points in the Milking Trials at the Dairy Show should be such that the resulting total represents as far as possible the value of the milk as a dairy product with regard to its use (a) as a food ; (b) in butter-making ; (c) in cheese-making.

Before discussing the details of a scheme to award points for the quantity and quality of the milk, it seems essential to consider :—

- (i) The probable variation in the composition of the cow's milk ;
- (ii) The food value of the milk ;
- (iii) The value of milk for butter-making ;
- (iv) The value of milk for cheese-making.

(i) THE PROBABLE VARIATION IN THE COMPOSITION OF COW'S MILK.

(a) *Fats and "solids-not-fat."*—As a general rule, the higher the percentage of fat, the higher is the content of "solids-not-fat." However, the variation in the latter figure is usually small, although there are numerous exceptions to the rule. A reference to the large number of results obtained at the Dairy Shows gives convincing evidence that a high fat content does not necessarily accompany a large percentage of "solids-not-fat."

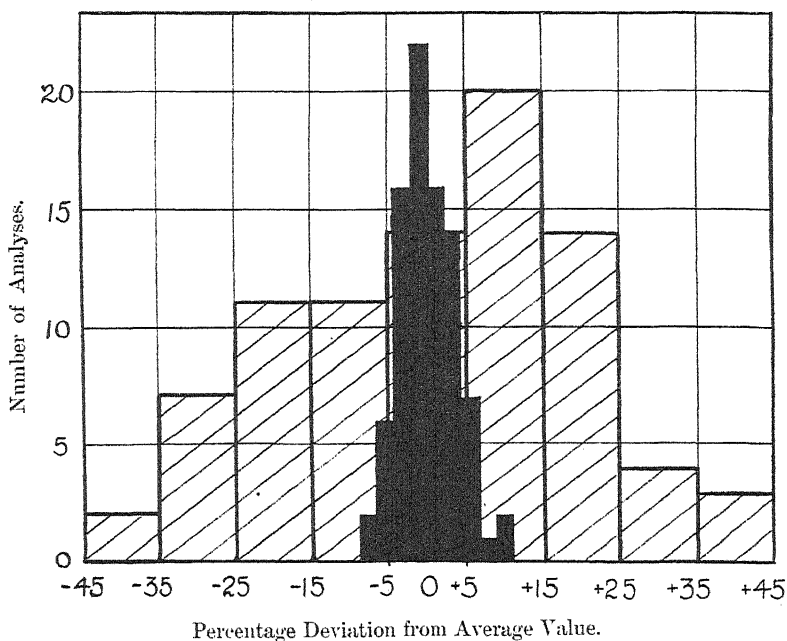
Thus, for 1922, with the Dairy Shorthorn Cows (Classes 1, 2, and 4), the extreme values for the fat content were 2.21 and 5.68 per cent. ; and the percentage of "solids-not-fat" only ranged from 8.34 to 9.94 per cent. The averages for the classes of that year were : fat, 4.03 per cent., and "solids-not-fat," 9.10 per cent.

The fat content ranges from about 1.8 per cent. below to 1.7 per cent. above the average of 4.03 per cent. Hence the variation in the fat content is from about 45 per cent. below to about 45 per cent. above the average figure (4.03), and gives a total range of nearly 90 per cent. of the mean value. That is, one milk may contain almost as little as half the average fat content, and another may yield almost as much again as the average.

With "solids-not-fat," no such variation is obtained. The "solids-not-fat" only give a mean figure range from about 8.4 per cent. below to about 9.2 per cent. above the mean value (9.10).

The extremely wide variation in the fat content from its average value, and the correspondingly small variation from the average "solids-not-fat" figure is well illustrated by the accompanying diagram, which represents the data given in Table 1 (for Classes 1, 2, and 4, in the 1922 Show).

FIGURE SHOWING THE WIDE DEVIATION OF THE FAT CONTENT OF MILK AND THE VERY NARROW LIMITS FOR THE DEVIATION OF THE SOLIDS-NOT-FAT CONTENT FROM THE RESPECTIVE AVERAGE VALUES.



Shaded area shows the relative variability of the Fat Content of Cow's Milk.

Black area shows the relative variability of the Solids-not-Fat Content of Cow's Milk.

TABLE I.

FAT.		SOLIDS-NOT-FAT.	
Number of Analyses.	Falling between stated intervals from average figure 4.03 per cent.	Number of Analyses.	Falling between stated intervals from average figure 9.10 per cent.
	per cent.		per cent.
2	—45 to —35	2	—8.8 to —6.6
7	—35 „ —25	6	—6.6 „ —4.4
11	—25 „ —15	16	—4.4 „ —2.2
11	—15 „ — 5	22	—2.2 „ 0.0
14	— 5 „ 5	16	0.0 „ 2.2
20	5 „ 15	14	2.2 „ 4.4
14	15 „ 25	7	4.4 „ 6.6
4	25 „ 35	1	6.6 „ 8.8
3	35 „ 45	2	8.8 „ 11.0

A reference to the corresponding tables for Classes 1, 2, and 4, for 1921, shows an even greater variation of the fat content from 2.00 per cent. to 6.64 per cent. (average, 4.05 per cent.) ; whilst the “ solids-not-fat ” gave only a very restricted range from 8.40 to 9.75 per cent. (average, 9.05 per cent.).

(b) *Constituents of “ Solids-not-Fat.”*—The average proportion between milk-sugar, protein, and ash is about 13 : 9 : 2, or more accurately, according to Richmond, 52.8 : 37.8 : 8.3. Hence, with considerable accuracy it may be written :—

$$\frac{\text{Sugar}}{\text{Protein}} = \text{Constant} = 1.44.$$

(ii) THE FOOD VALUE OF MILK.

The food value of milk depends upon its efficacy first in supplying energy, and secondly in repairing waste tissues. As a food for children, it must not only repair the waste tissues, but also supply the necessary material to build them up.

Adults.—With adults, whose tissues are already built up, milk may be considered as a food mainly for supplying energy. The energy obtained by the complete combustion of each constituent of the milk is as follows :—

Fat ...	...	9,200 calories per gramme.
Sugar ...	3,900	„ „
Proteins ...	5,800	„ „

Complete combustion to carbon dioxide and water, however, only occurs with the fats and sugars, whilst the protein is decomposed into compounds such as urea. Hence, there is a loss of energy in the excreted matter which reduces the effective heating value of the protein to about 5,000 calories per gramme. The ratio of the figures for the energy contents of fat, sugar and protein is, therefore, about 2.4 : 1 : 1.25. Since the milk supplies principally energy, it is obvious that the higher the percentage of fat in the milk, the greater is its food value for adults.

Children.—From Table 2, giving the composition of fat, sugar and protein, it is seen that fat and sugar contain the same elements, and may therefore replace one another; but where tissue containing high proportions of carbon and hydrogen is being formed, it is obvious that the fat is most suitable. Furthermore, fat seems an absolutely essential constituent to enable children to thrive.

TABLE 2.

					Fat.	Sugar.	Protein.
					per cent.	per cent.	per cent.
Carbon	...	...	...	...	75.6	42.1	52.7
Hydrogen	...	...	...	...	11.9	6.4	7.1
Oxygen	...	...	...	...	12.5	51.5	22.8
Nitrogen	...	...	...	...	—	—	15.8
Sulphur, Phosphorus, &c.	...	...	...	...	—	—	1.6
TOTAL					100.0	100.0	100.0

The protein contains nitrogen and phosphorus, and therefore cannot be replaced by either fat or sugar. The protein in cow's milk, although closely related to, differs considerably from that in human milk; thus, human protein does not form an appreciable curd with rennet, but gives a fine precipitate with acids. It has, therefore, been held for many years that the protein of cow's milk, by forming a curd or clot in the stomach, is far less digestible than human protein. As a result of an enormous number of observations by various investigators, all views on the digestibility of cow's milk have been revolutionised; (For an account of this work, see "Milk and its Relation to the Public Health," Bulletin No. 41, United States Treasury Department, 1908, page 656), and it is now believed that a reasonable amount of protein matter is almost equally digestible in the *absence* of an excess of fat. The experiments have proved that the feeding of children on a milk with a considerable excess of fat above that normally present in human milk is liable to cause gastric troubles in which the protein then undoubtedly plays a very prominent part.

Hence it follows that cow's milk should be suitably diluted to reduce the fat content. This means that if one milk sample contains 3.25 per cent. and another 4.35 per cent. of fat, one pint of the latter is really worth one pint and a third of the former, since one pint of the milk containing 4.35 per cent. of fat can be diluted with water to one pint and a third and still contain 3.25 per cent. of fat, which is a suitable amount for the feeding of infants (see Table 3). It is not suggested that the presence of 4.35 per cent. of fat in cow's milk constitutes a dangerous excess. A reference to Table 3 also shows that such dilution does not jeopardise the health of the children by reducing the protein to a dangerous degree. In fact, the amount of protein will still exceed that normally present in human milk. In a later section the question of the excess of protein with relation to fat in cow's milk will be discussed. It therefore follows that the fat content of a milk is the determining factor in estimating the value of the milk as a food, although the use of the milk in feeding infants demands more care than is normally bestowed upon so important a matter. This point, however, does not directly concern the question at issue, and must be omitted from a consideration of the value of the milk. Indeed, it would appear from the statements given above that the value of the milk as a food for infants depends very largely on the *fat present*.

FOOD VALUES.

The average composition of human and cow's milk is given in Table 3 for reference.

TABLE 3.

Composition of						Human Milk ;	Cow's Milk.
						per cent.	per cent.
Fat	...	...	...	...	...	3.25	3.75
Sugar	...	...	...	...	...	6.75	4.75
Protein	...	...	...	...	...	1.25	3.40
Ash	...	...	...	...	...	0.25	0.75
Water	...	...	...	...	...	88.50	87.35
Total						100.00	100.00

Human milk contains the constituents in such a proportion and of such a quality that they are all available and digestible. It is an ideal food, hence the value of cow's milk must be judged by its approximation to the standard of human milk.

<i>Human Milk.</i>	Fat.	Sugar.	Protein.
Anabolic Ratio—	3.25	6.75	1.25
	2.6	5.4	1.00
<i>Cow's Milk.</i>			
Anabolic Ratio—	3.75	4.75	3.40
	1.10	1.40	1.00

Experiments have proved that children do not thrive well on milk unless the anabolic ratio approximates to 2 : 4 : 1, and they derive most benefit when the constituents are as finely divided as possible in the stomach. This condition may be brought about by diluting cow's milk with water, and adding fat and sugar.

The ratio of sugar to protein in cow's milk is almost constant (see page 114), so even though the amount of "solids-not-fat" may vary very slightly (see page 112), the value in the anabolic ratio is always the same, viz., 1.4 : 1. Thus the fat again becomes the determining factor in the value of milk, and the greater the percentage of fat the nearer the milk approaches the ideal ratio.

Again, consider the metabolic ratios for human and cow's milk. (For energy values, see page 115).

$$\text{Metabolic Ratio} = \frac{\text{Fat} \times 2.4 + \text{Sugar} + \text{Protein} \times 1.25}{\text{Protein.}}$$

Human Milk.

$$\begin{aligned} \text{Metabolic Ratio} &= \frac{3.25 \times 2.4 + 6.75 + 1.25 \times 1.25}{1.25} \\ &= 12.9 \end{aligned}$$

Cow's Milk.

$$\begin{aligned} \text{Metabolic Ratio} &= \frac{3.75 \times 2.4 + 4.75 + 3.40 \times 1.25}{3.40} \\ &= 5.3 \end{aligned}$$

The enormous difference due to the small amount of protein in human milk is obvious. Furthermore, the metabolic ratio for cow's milk reduces to a simple equation in the following manner:—

$$\begin{aligned} \text{Metabolic Ratio} &= \frac{\text{Fat} \times 2.4 + \text{Sugar} + \text{Protein} \times 1.25}{\text{Protein.}} \\ &= \frac{\text{Fat} \times 2.4}{\text{Protein}} + \frac{\text{Sugar}}{\text{Protein}} + 1.25 \\ &= \frac{\text{Fat} \times 2.4}{\text{Protein}} + 1.44 + 1.25 \\ &= \frac{\text{Fat} \times 2.4}{\text{Protein}} + 2.69 \end{aligned}$$

If the proportion of "solids-not-fat" be supposed to increase (say by the fraction x of its value) then a corresponding increase occurs in the amount of protein (by a fraction x of its former value). The metabolic ratio is therefore diminished; that is, the value of the milk as a food for children is decreased, since the milk now deviates more than formerly from human milk. One is naturally forced to the

conclusion that the fat is the most important constituent of cow's milk from a food value point of view.

AWARD OF POINTS.

The question therefore arises as to the allocation of points in the Dairy Show analyses, and considering the details which have been given above, the writer is inclined to accept the present method of award as perfectly satisfactory, and in accord with the known estimation of food values. That is, it is accepted that the fat in the milk is one and three-quarter times as valuable as the "solids-not-fat" (see page 111).

It may be contended that too high a value is placed upon the butter-fat, but it must be realised that the fat is the constituent which varies most, whereas the amount of "solids-not-fat" is almost constant. In consequence, any increase in the points awarded to "solids-not-fat" will merely accentuate an almost constant factor. Again, any serious increase in the points awarded for "solids-not-fat" will involve a considerable decrease in those awarded for fat.

It is accepted that 100 points shall be awarded, as stated above, for the quality of 100 pounds of standard milk, and consequently the following table (Table 4) gives in the first two rows all the possible methods of awarding the points. To understand the effect of awarding points in accordance with the suggestions in the first two rows of Table 4, the latter has been extended to show the difference in the points which would have been awarded to the two extreme milks mentioned in connection with Classes 1, 2, and 4, for the year 1922.

The composition of the two extreme milks would be:—

Fat	...	...	2.21%	5.68%	Difference—3.47%
Solids-not-fat	...	...	8.34%	9.94%	Difference—1.60%

Hence the difference between the awards will be due to the points given for 1.60 lbs. of "solids-not-fat," and 3.47 lbs. of fat. These values are given in rows three and four of Table 4, whilst the fifth row gives the total difference between the points which would have been awarded.

TABLE 4.

Points awarded per pound of—														
Fat	...	...	30	28	25	20	19	17	13	10	8	5	2
Solids-not-fat	...	...	1	2	3	4	5	6	7	8	9	10	11
Difference in award for 3.47 lbs. of fat and 1.60 lbs. of “solids-not-fat.”														
Fat	...	...	104	92	86	69	66	59	45	35	28	17	7
Solids-not-fat	...	...	2	3	5	6	8	10	11	13	14	16	17
TOTAL			...	106	95	91	75	74	69	56	47	42	33	24

From the table it will be observed that the difference between the awards diminishes as the points for "solids-not-fat" are increased.

But for Dairy Show purposes the more distinctive the method of awarding the better it is for judging. Thus, on the basis of the last method of awarding points, all the cows in Classes 1, 2, and 4 (totalling 43), would have secured final points (excluding weight of milk) which would have given a maximum range of 24 points. Actually the points would have failed to give even this limited range, because in practice—

- (a) The minimum yield of fat does not correspond with the minimum of “solids-not-fat,” and similarly for the maxima;
- (b) The results are calculated on the result of one analysis, whereas on averaging the morning and evening analyses, the low figure may be compensated by a second higher value.

From the practical point of view, unless the Association has a whole army of calculators to cope with the thousands of multiplications involved in the milking trials, the following appear to be the only feasible points which could be awarded :—

Fat	...	...	30	25	20	10	5
Solids-not-fat			1	3	4	8	10

The tendency of the moment seems to favour an increase in the points awarded for “solids-not-fat,” so the first two possibilities need not be discussed.

One award, which is to give twenty points for fat and five points for “solids-not-fat” is so little different from the present that there is no real advantage gained by its adoption.

The fourth award (Fat, 10 points, Solids-not-fat, 8 points) means that for 100 lbs. of standard milk, the following points would be obtained :—

For weight of milk	...	...	...	...	100 points.
For 3 lbs. of fat	...	...	...	...	30 „
For 8.5 lbs. of “solids-not-fat”	...	...	...	...	68 „
TOTAL					198 „

The figures show that the “solids-not-fat” are now regarded as of two and one third times the value of the fat, which is certainly unsatisfactory and quite unacceptable.

Hence the present scheme seems to be only too well founded, and any change would appear to be fraught with considerable difficulties in the way of justification, and to be open to very serious criticism.

The matter which now arises is to consider how far the present method of award represents the value of milk, not as a food, but as the raw product from which butter and cheese are manufactured.

(iii) MILK FOR BUTTER-MAKING.

In butter-making, it is obvious that the fat is the most important constituent and merely from this point of view would be awarded almost all the available points. No doubt a few points would be reserved

for the "solids-not-fat," which give the value to the by-products, skim and butter milk, used for instance in the feeding of pigs.

The award of points would therefore be in the probable ratio of 85 for the total fat, and 15 for the total "solids-not-fat." This approximates to 28 points per pound of fat, and 2 points per pound of "solids-not-fat."

(iv) MILK FOR CHEESE-MAKING.

In cheese-making, the protein assumes much greater importance. Thus an average Cheddar cheese will contain about equal quantities (30 per cent.) of fat and protein. It would therefore follow that the award of points for the fat and protein should be equal. A few points should be given to the sugar, which renders the whey of value either as a foodstuff, or for the manufacture of milk-sugar.

If points therefore be awarded for the quality of the milk in the following manner:—

For fat...	...	...	...	...	...	48 points,
For protein	...	...	...	...	...	48 "
For sugar	...	...	...	...	...	4 "

it is equivalent to awarding:—

For each 1 lb. of fat	...	...	...	...	16 points,
For each 1 lb. of "solids-not-fat"	...	...	...	...	6 "

SUMMARY.

The following approximate points would therefore be awarded according to the particular use of the milk:—

	Food.	Butter.	Cheese.
Fat (per lb.)	20	28	16
Solids-not-fat (per lb.)	4	2	6

The amount of milk used directly as a food is considerably in excess of that used for both butter and cheese-making. Thus it is for this reason that the award for food value should receive prior consideration. However, if the average be taken for the butter and cheese points, the following results are obtained:—

	Food.	Butter and Cheese (average).
Fat (per lb.)	20	21
Solids-not-fat (per lb.)	4	4

CONCLUSION.

It is therefore concluded that the points should still be awarded under the same scheme as that in force at the present time:—

Fat	...	...	...	20 points per pound.
Solids-not-fat	...	...	...	4 " "

UNIVERSITY COLLEGE, READING.

REPORT ON THE WORKING OF THE BRITISH DAIRY INSTITUTE FOR THE YEAR ENDING JULY 31ST, 1923, AND THE ACADEMIC YEAR ENDING SEPTEMBER 30TH, 1923.

General.—During the year just ended, we have again had a full number of students, and at the beginning of the term we had to restrict the numbers owing to the crowded state of the rooms. This difficulty of overcrowding is likely to be removed in the near future and we hope to get the new buildings in working order for next summer term. The entry of new students for the coming session is in excess of last year, and lately, those entering have been accepted subject to the new buildings being ready in March.

It is a great loss to the Institute to lose the services of Mr. J. Holmes, who did exceedingly good work as Assistant Instructor. He was appointed a Dairy Inspector under the Ministry of Agriculture. Fortunately, we have (subject to your approval) got a very good man in Mr. Capstick to succeed Mr. Holmes, and he will take up his duties in the middle of October.

The financial working for the year was quite satisfactory, but for next year I would like you to consider the fitting and equipping of a milk room, where students would become acquainted with the handling of milk for sale, cooling, pasteurising, bottling, &c. This side of dairying is essential for the successful training of students. All the produce made has met with a ready sale, especially during the latter part of the year. The amount of surplus milk handled has far exceeded any previous year, and for three months every available vat was full.

Students.—The work of the students was again most satisfactory. A general keenness and good spirit prevailed, and not a single case of slackness was reported. The total number who attended the Institute during the year was 119, and these were divided as follows:—

First Year Diploma	...	...	...	10
Second Year Diploma	...	...	...	16
Six Months' Joint Course	...	...	...	31
Three Months and under	...	...	...	62

TOTAL ... 119

There is still no room for short course students during the summer, but a large number are worked in during the winter terms, and this year there is already a very good entry.

Examination Results.—Three examinations were held at the Institute during the year: two for the B.D.F.A. Diploma and

Certificates, and one for the National Diploma in Dairying. The following is the Pass List for Reading students :—

<i>June Examinations.</i>			Reading Entries.	Passed.
Cheesemaking	...	...	18	18
Buttermaking	...	...	40	34
<i>September Examinations.</i>				
Diploma	...	...	15	10
Cheese	...	...	20	20
Butter	...	...	6	5
<i>N.D.D. Examination</i>	...	...	38	26

In the N.D.D. Examination five honours out of six granted were gained by Reading students, taking the first five places in order of merit. No Reading students failed in this examination, as all passed in practical work, but have to take some of the papers next year.

Amount of Milk used.—The total amount of milk bought and used during the year was 25,452 gallons, and was divided as follows :—

Cheddar	...	...	...	8,022
Cheshire	...	...	...	1,294
Derby	...	...	...	2,052
Leicester	...	...	...	426
Lancashire	...	...	...	330
Kingston	...	...	...	263
Roquefort	...	...	...	24
Gloucester	...	...	...	210
Edam	...	...	...	833
Small Holder	...	...	...	195
Caerphilly	...	...	...	946
Wensleydale	...	...	...	2,734
Stilton	...	...	...	1,707
Soft Cheese	...	...	...	1,375
Total for Cheese	...	...	...	20,411
„ Butter	...	...	...	5,041
Total received	...	...	...	<u>25,452</u>

The amount of butter made was 2,015 lbs., giving a butter ratio of 25·55 as milk to produce each pound of butter.

There was also handled an additional 29,716 gallons of surplus milk, which was all converted into Cheddar, Cheshire, or Derby Cheese, and close on 1½ tons of butter were made for different people in the neighbourhood.

Shows.—During the year we sent a small exhibit to the Oxford Show, at Witney, also the usual exhibit at the Dairy Show. We also exhibited cheese for competition, and out of five entries two took First and three Second Prizes for different varieties.

(Signed) ALEC TODD, *Manager.*

ANNUAL REPORT OF THE CONSULTING CHEMIST AND DAIRY BACTERIOLOGIST,

T. J. DRAKELEY, Ph.D., M.Sc., F.I.C., F.C.S., M.I.M.E.

It is impossible to give a complete record of the investigations made on behalf of members during the past year as my term of office only dates from the regretted death of Mr. F. J. Lloyd.

The number of samples received has been very small, and they were mostly samples of milk for routine analysis or bacteriological examination. Samples of water for dairying purposes have also been submitted.

The analyses gave no exceptional or interesting results and call for no special comment in this report.

THE DAIRY SHOW OF 1923.

By SAMUEL R. WHITLEY.

LONG before the clerical work of one Dairy Show is cleared up the preparation for the next starts, and the Show of 1923 was no exception to the rule. Arrangements were well in hand and all stand space had been let for some months, when, in August, news came of the very serious spread of Foot and Mouth Disease. Would it be possible to hold the Show at all; and if held, would there be any Cattle present; how to make the Show attractive without Cattle? These and other anxious thoughts were very much present in the minds of the British Dairy Farmers' Council until the very last moment.

To plan a Show, not knowing whether to expect 100, 200, 300, 400, or 500 head of cattle, is a difficult job—this time it was quite impossible to estimate the number likely to be present, and until the clock struck 10 on Saturday morning, the hour after which no entries were to be received, we did not know what to expect. Sundry calculations and comparing of the entries, with elaborate maps showing the Scheduled Areas, proved practically useless—the areas were varying all the time and no one man could be found with local knowledge sufficient to say whether this or that herd was within or without a given area. We had to give it up and make a blind shot, which in the end proved exactly on the mark. The order was given to prepare for 250 head of cattle out of 539 entered; actually 249 put in an appearance.

The reduced number certainly added to the comfort of the Show—it is not merely that each cow could have adequate standing-space, that is important and could, perhaps, be provided for larger numbers, but each cow requires far more space than that in which she stands—camping ground for the herdsmen with their very large boxes and other impedimenta, to say nothing of the great strain on the Milking Trial and Butter Tests Judges, whose work needs to be so accurate and done at such high pressure when very large numbers are present.

After 20 years' experience, first as a Judge of the Milking Trials, and then as Steward of General Arrangements, the writer would like to see a definite limit put to the number of cows present in the Hall. In the old days there were very few classes for Heifers, and none for the five-year-old Cows—then it was considered to be a Show only for Cows at the height of their prime; now it has become the Mecca for all ages of Milking-Stock. For the first time, only Cows being recorded in an official Milk-Recording Society were eligible—on the statistics

of two previous years it was estimated that this might reduce the total numbers by 10 per cent., but the actual entries showed an increase of about 5 per cent., in spite of the new restriction. A further restriction that cows coming to the Dairy Show should be eligible for export from or import into this country, *i.e.*, they should have passed the Tuberculin Test, has been suggested—perhaps the time is not quite ripe for such an innovation, perhaps the test itself will be improved on in the light of new scientific knowledge, but the time cannot be very far distant when this test must be imposed. Already there is in the country a considerable number of herds producing “Certified” and “Grade A T.T.” milk which are barred from exhibiting at the Dairy Show, as it is prohibited for such cattle to mix with non-tested animals. It only needs a further development of this movement, which is highly desirable in itself, to react on the entries in such a manner as to seriously reduce the number of cows at the Show.

Whatever qualifications may, in the future, be attached to entry at the Show, these should be in the direction of cutting out the less desirable animals from every point of view.

The Council of the B.D.F.A. should be alive to such a possibility and legislate in advance for some such contingency.

For the first time a Class for Three-times-milked Cows was provided and brought seven entries (five Friesians and two Shorthorns); but, unfortunately, this Class, like so many others, was somewhat marred by the Foot and Mouth Disease, only five being able to put in an appearance.

Animals in this class were judged for Inspection with their corresponding classes, but for Milking Trial Prizes were judged as a class to themselves. The Council thought it unfair for thrice-milked cows to compete with twice-milked cows for the ordinary Milking Trial and Butter Test Prizes and Trophies, and this excluded them from competing for the Bledisloe Breed Trophy, which would seem, on the face of it, to be undesirable.

One cannot feel that the present state of things is satisfactory—everyone is agreed that the greatest-yielding cows must be encouraged, and many of them demand thrice-milking, but how to put them on a par with other cows competing for the Prizes and Trophies now available is a problem which needs the earnest consideration of the Council.

Altogether, 215 cows and heifers put in an appearance, and it is estimated that about a further 130 to 140 were unable to come owing to the Foot and Mouth Disease restrictions.

The following table of competitive entries for the last 12 years goes far to show the satisfactory nature of the demand for the space available :—

THE FOLLOWING TABLE GIVES COMPARATIVE DETAILS OF THE ENTRIES AT THE DAIRY SHOW WITH THOSE OF THE PAST TWELVE YEARS.													
	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1919.	1920.	1921.	1922.	1923.
Cattle	247	232	288	222	210	286	234	204	292	384	455	515	530
Milking and Butter Tests	224	236	264	213	209	265	167	198	334	492	614	760	772
Goats	72	84	75	81	105	110	85	116	115	109	101	91	67
Poultry	3,280	2,997	3,259	3,300	3,350	3,840	3,089	2,953	2,736	4,317	4,348	4,398	4,085
Pigeons	2,504	2,282	2,280	2,226	2,496	2,407	2,291	2,735	2,760	3,259	3,272	3,208	3,115
Cheese	357	355	362	249	343	395	301	271	342	462	406	418	488
Bacon and Hams...	76	55	104	58	71	89	67	45	—	34	56	87	89
Butter	668	535	525	484	618	549	371	339	242	286	322	388	401
Cream	47	42	47	26	48	43	27	20	16	19	32	37	33
Skim-milk Bread, &c. ...	135	115	98	72	83	64	46	65	40	40	No class	No class	No class
Honey, &c.	85	88	96	87	95	106	126	77	20	49	63	58	92
Bottled Fruits and Vegetables ...	—	—	—	—	—	—	—	—	—	45	25	26	53
New and Improved Inventions...	37	31	34	21	25	41	24	6	23	14	38	30	37
Roots	181	218	196	172	190	190	59	51	80	144	148	183	190
Butter-making Contests...	207	120	145	165	165	141	97	101	110	86	162	141	129
Milkers' Contests	132	126	122	153	119	137	85	82	77	80	98	44	43
Junket-making Contest ...	—	—	—	—	—	—	—	—	—	7	8	12	23
Colonial Produce	—	—	—	—	—	—	—	—	—	2	2	3	3
Cow Judging Contests ...	—	—	—	—	—	—	—	—	—	—	—	—	7
	8,312	7,516	7,895	7,529	8,127	8,723	7,069	6,963	7,187	9,829	10,150	10,399	10,766

Looking over old Show Reports, one notes constantly the outcry for more space. To give an example, there is such an outcry in the report of the 1913 Show; then the cattle numbered 286, against 539 entered in 1923, and other entries have increased also. The available space has remained the same. It is, indeed, the old problem of how to put a quart measure into a pint pot. Fortunately, there is some prospect of a certain amount of relief for the 1924 Show, as the Agricultural Hall Company are proposing this summer to add a Gallery to the Gilbey Hall.

This will relieve the pressure in some directions, but hardly at all where it is most needed, viz., for the cattle on the ground floor with daylight above them.

One of the main purposes of the London Dairy Show should be to encourage the London public to take an interest in the production of their daily milk, and to encourage them to drink more of it. To do this effectively, overcrowding should be avoided, only the best stock exhibited, and the produce dealt with as perfectly as possible. On the other hand, the Milking Trials and Butter Tests must continue to be supported, as they have for so many years tended towards better and more economical milk production. How best to fulfil these objects and to maintain the great interest aroused by the Dairy Show within the limited space available, is a problem needing much consideration and foresight.

CATTLE.

A re-arrangement of the classes was made, with a view to placing them roughly in order of size and to get all the smaller cattle together. This, perhaps, improved the general symmetry of the Show.

Seventeen out of an entry of 29 in Class 1 for Pedigree Shorthorn Cows were able to put in an appearance, and generally they pleased the two Judges, but they agreed in finding *the* ideal cow in "Longhills Melody," the first prize winner in the Younger Cow Class, where only seven out of 24 were able to appear. She was bred by E. A. Smith, Esq., and shows the well-known "Kelmescott" blood. Her udder and teats were of almost perfect formation, she carried herself well, and with an average yield of 64.4 lbs. she wins the Milking Trials. In the Class for Pedigree Shorthorn Heifers, out of a very strong entry of 37, only 13 appeared, but they were a good lot, and the winner here also is of the "Longhills" breeding.

Major S. P. Yates created a record by winning the first three awards in the Milking Trials in Class 1. The "Thornton" Challenge Cup, value 50 guineas, offered to the owner of the best group of three Pedigree Dairy Shorthorn Cows or Heifers, was won by Mr. D. Aldridge, with Sir G. A. Wills as Reserve.

Again in the Non-Pedigree Shorthorn Classes, though the numbers were spoiled by the restrictions, the Judges give high praise to the prize winners, and considered the average reasonably good, but the tail end was decidedly weak.

Only half of the Lincoln Red Shorthorn Cattle entered were present, but they made a very good show. Mr. John Evens' "Burton Ruby 23rd," the winner, is an almost perfect-looking specimen of the dual purpose animal, but she is beaten in the Milking Trials by her stable mate, "Burton Amy 7th." The remaining cows varied very much in type, but the heifers were more uniform, and distinctly good.

British Friesians, which have done so well at recent Dairy Shows, were very hard hit by the Foot and Mouth restrictions and other causes. Out of a total entry of 85, only 22 were able to appear, but they made a good show.

The first prize winner in the Aged Cow Class was Lord Rayleigh's "Terling Warner 3rd" in the Thrice-Milked section. She also won first place in her division of the Milking Trials, giving eight gallons and gaining 166 points, but being in the Thrice-Milked section, she is barred from any of the cups and also ineligible to represent her breed for the Bledisloe Trophy, an unfortunate and unsatisfactory result. The class for Young Cows was distinctly good, though only 11 out of 25 could appear.

In the Heifer Class, only 2 out of 14 were present.

The Thornton Fifty-Guinea Challenge Cup for the best group of three pedigree Friesians was awarded to the Hache Herd. The Friesian Judges comment on the vast improvement in all dairy points when compared with this breed's first appearance at the Dairy Show just before the war.

South Devons were a small class of five entries with three present, of good quality, but without the exceptional milk yields they sometimes show. The prize-winners well deserved the honours gained.

Devons, which but a short time ago were considered merely a beef breed, did creditably, five out of seven entries being present. All the winners were either bred by or shown by Messrs. Chick.

Barely half of the entries in the Red Poll Classes could be present. Originally considered an East Anglian breed, they seem to be spreading all over the country. Both the Cow Classes were distinctly good, the older cows scoring particularly well in the Milking Trials. The younger cows were a fine lot, but the heifers were a little disappointing, though the winner in the Milking Trials, Captain Alan Richardson's "Seven Springs Lupine," is able to show nearly four gallons of milk with between five and six per cent. of butter-fat.

Blue Albions.—A sad fate awaited this Cinderella breed at their first Dairy Show, only two out of an entry of 16 being present. It

was a good sporting effort to get such a fine entry at their first shot and we must hope for better luck next time.

Exactly half the Ayrshires entered put in an appearance, and they must be considered as *the* breed of the 1923 Dairy Show. The cows were an exceptionally good deep-bodied lot of cows, with finely placed udders and large, easily milked teats. The dairy qualities were quite outstanding, and they proved themselves equally good in the Milking Trials, showing well over six gallons of rich milk.

The Ayrshire Heifers, too, were a fine even lot, again with nicely placed udders and good teats, making good scores in the Trials. There was much jubilation when this breed was awarded the Bledisloe Trophy, and the writer would specially like to add his congratulations, as, when for some six years he acted as one of the Milking Trial Judges, it was usual to write against this breed: "No Award, not up to standard." It is particularly pleasing to see the breed doing so well again at this Show in spite of the long distance they have to travel, and it is to be hoped that they will do their quota towards establishing a cheap and economic milk supply in England.

Guernseys, taken as a whole, were disappointing this year, the Foot and Mouth Disease undoubtedly keeping away some of the best animals. All the three winners in the Aged Cow Class came from the same herd, though these animals did not gain any Milking Trial awards, and the class, as a whole, was beaten in the Trials by their younger sisters, which were considered the best Guernsey class in the Show.

In the Guernsey Heifer Class only two out of 14 put in an appearance, both good animals, and the first in Inspection also carried off first honours in Milking Trials, with the excellent score of 102.5 points.

Jerseys also were handicapped by the Foot and Mouth Disease regulations. The Old Cow Class was a good one, and the winners possessed dairy qualifications combined with good constitution. Mr. Carson's "Diana's Rose," second for Inspection, being only .5 points behind the winner in Milking Trials. The two Heifer classes, though small in numbers present, were satisfactory, Mrs. Hayes Sadler's Island-bred heifer "Zaffarine" being mentioned as an outstanding animal, and she also won in the Milking Trials.

Kerries, like the rest, suffered through absentees, but the cows were a useful lot, though some were not quite typical, leaning somewhat towards the Dexter type. Captain Nelson Zambra and his partner carried off first honours, both in Inspection and Milking Trials, with his "Flora of Carton." The Heifers also, though only four in number, were a strong lot.

Dexters, with more than half the entries absent, made up in quality what they lacked in numbers, both classes being reported as very good.

BULLS.

Is there room for Bulls at the Dairy Show? Could they not be awarded prizes in their absence on their breeding record as the Danes do, taking into consideration the Milk and Butter Records of their progeny?

The Robert Mond Special Prize and Challenge Shield have at last made a start in this direction, but still the average milk producer does not keep his bull long enough to know what result he has had on his herd. It is all guesswork, while our competitors, the Danes, who have reduced Dairy Bull Judging to a science, say that you can never tell until you see the records of the progeny.

The two classes for Dairy Shorthorn Bulls were good ones, and Captain The Hon. E. A. Fitzroy, M.P., produced an outstanding winner in "Foxhill Caryl," bred by himself.

The Jersey Bulls, though small in number, were excellent, and the two placed first and second would take a lot of beating.

There were only two entries in the Young British Friesian Bull Class, and the Judges had no difficulty in awarding a first prize.

In the class for Bulls of any other Pure Breed, Silver Medals were awarded to a Guernsey and to a Red Poll.

The Special Prize of £10, offered by Mr. Robert Mond, for two animals, the progeny of one Bull, was won by Major C. R. Dudgeon, with Ayrshire Heifers "Cargen Holm Proud Lady 8th" and "Cargen Holm Maud 16th." The Second Special Prize of £5, offered by the Countess de la Warr, was awarded to Messrs. John Evans and Son for Lincoln Red Shorthorn Cows "Burton Ruby 23rd" and "Burton Amy 7th."

GOATS.

Like the cattle, many were kept away by Foot and Mouth Disease restrictions. "It is an ill wind that blows no-one any good," and the numerous absentees amongst the cattle made it possible again to bring the goats up to the place of honour at the top of the Hall, which was much appreciated by the goat-fanciers. Where to put them in the future, if cattle return to their normal numbers, is a difficult problem. The shed beyond the Gilbey Hall seems undesirable in many ways; perhaps a self-contained and homely corner may be found in the new gallery it is proposed to add to the Gilbey Hall.

The classification, in 1923, of the goats in the Milking Trials was similar to that of last year, *i.e.*, She-Goats qualified as "Star" or "Q Star" Milkers, whilst the second class was for She-Goats not eligible to compete in the previous class. Entries in the Milking Trials numbered only 31 against 43 in 1922. Of these 31, 13 were entered in the "Star" or "Q Star" Class, and 18 in Class 38. All the goats competing in the higher class obtained points sufficient to qualify for the affix * or Q*. Again, Miss Pope's "Problem of Bashley" Q*, Q*, Q* proved to be the winner, giving 10.2 lbs. of milk after being 196 days in milk, her butter-fat being 5.42 and 5.23, not quite

such a good record as last year, though this goat has now won the "Tremedda Selene Cup" for four years in succession, and no other name is yet engraved on the Cup.

Miss Chamberlain's "Welfare of Westons" Q*, Q*, was second with 8.9 lbs. and butter-fat 4.20 per cent. and 4.28 per cent. after 201 days milking, the third place being taken by Mrs. Hines' "Grietze" Q*, one of the recently imported goats, and her yield was 7.4 lbs. after 226 days in milk.

In Class 38, for goats not eligible for the above class, Mrs. Rutter's "Raydon Meltis" took first prize with 8.5 lbs., after milking 148 days. Miss Henderson's "Vertue" was second with 8 lbs., after milking 111 days. This again is a goat of the recent importation.

The general classification of the goats was opened slightly, so as to allow entrance by the recent importations, and thus most interesting comparisons are being obtained.

Cattle Breeders should note with interest that the Goat Classes include one for She-Goats that are recorded in a recognised Milk Recording Society, and this brought 15 entries, the most popular class in the Show.

The Records prove that goats weighing from 100 lbs. to 150 lbs. live weight are giving nearly 400 gallons of high quality within the year. If, as is thought, live weight bears a close relationship to food consumed, this must be very economical milk production, as far as food consumed is concerned. Four of these Star Goats together have given over six tons of milk within the year. Cows must look to their laurels.

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The two tables on pages 9 and 10 give interesting comparisons of the results in recent years.

In spite of absentees, the Judge is able to give a very satisfactory report on the Inspection Goat Classes, and great interest was shown by the public, the goat sanctum being crowded all the time.

CHEESE.

The total entries show a large increase on last year and double the number of exhibits in 1911. This means more space, and less room for the arduous task of staging and packing away the empties. In spite of the absolute necessity of double tiering practically all the classes, which means much more congestion in unpacking and packing up, this work was done with smooth working and less complaint than usual, which would seem to indicate improved organisation.

Cheese-making is one of the main foundation stones of a flourishing dairy industry, and we must hope that such largely increased entries indicate that the industry is gradually regaining its pre-war vigour.

TABLE I.

Class.	Description.	Number in Class.		Average Live weight.	Average yield of Milk.	Highest yield.	Lowest yield.	Average period of Lactation.	Average Fat.	Average Solids not Fat.	Number of Animals below Standard for Fat.	Average points gained.
		Entered.	Competing.									
39	Toggenburg	5	3	lbs. 108	lbs. 6.8	lbs. 8.0	lbs. 5.0	days. 123	4.53	8.90	—	16.8
40	British Toggenburg	7	3	lbs. 144	lbs. 7.0	lbs. 8.5	lbs. 5.1	days. 173	4.09	9.05	—	17.4
41	British Alpine	5	0	—	—	—	—	—	—	—	—	—
42	Saanen	2	1	lbs. 146	lbs. 7.4	lbs. 7.4	—	days. 226	4.40	8.77	—	19.7
43	Anglo-Nubian	3	0	—	—	—	—	—	—	—	—	—
44	Any other Variety	8	4	lbs. 146	lbs. 8.3	lbs. 10.2	lbs. 6.6	days. 188	4.38	9.37	—	21.3

TABLE II.

Description of Class.	Year of Show.	Number of Animals Competing.	Average Live weight of each Animal.	Average period of Lactation.	Average weight of milk.		Average weight of Milk per day.	Highest yield.	Lowest yield.	Percentages.			
										Fat.		Solids.	
					lbs.	days.				a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
Star Milkers	1919	6	—	261	3.6	3.1	6.7	10.8	4.5	4.13	3.89	8.89	9.02
Star or Q Star Milkers ...	1920	7	130	219	3.9	3.2	7.1	9.0	4.9	4.61	4.72	9.02	9.17
" "	1921	16	145	192	3.7	3.1	6.8	11.3	4.1	5.64	5.50	9.12	9.27
" "	1922	14	144	190	4.4	3.6	7.0	12.6	5.6	4.60	4.52	9.07	9.19
" "	1923	6	142	188	4.5	3.5	8.0	10.2	6.6	4.31	4.48	9.22	9.21
Not eligible as Star Milkers	1919	15	—	220	2.1	2.0	4.1	6.8	0.7	5.82	5.91	9.74	9.78
" " "	1920	20	113	196	2.6	2.2	4.8	8.7	1.0	5.07	4.95	9.30	9.28
" " "	1921	14	123	145	3.3	2.8	6.1	9.4	2.9	5.10	4.96	8.75	8.88
" " "	1922	21	131	188	3.2	2.9	6.1	8.5	3.6	4.41	4.62	8.98	9.05
" " "	1923	5	127	147	3.9	2.9	6.8	8.5	5.1	3.96	4.78	8.93	8.99

Stiltons.—Both classes showed healthy entries and the competition was keen. It used to be considered that Stilton making was the preserve of the smaller private dairies where all the milk was entirely under one control, but all the awards this year have gone to the large Companies, and were, presumably, “factory-made.”

The Judge considered the exhibits as disappointing on the whole, and mentions the discoloration of the curd, which is an old fault, and one which has been dealt with exhaustively by the workers at the National Institute for Research in Dairying, who have published the results of their investigations. Makers who wish to cure this serious fault should consult the pamphlets already issued by that body.

Cheddar Truckles and Cheddars show very large entries, and judging must be a very difficult task. 37 entries in the Truckles, 61 entries in the Four Cheese Class, and 41 entries in the 20 Cheese Class, means the staging and judging of 1,286 cheeses. Not everyone can realise what an amount of patient labour such a task entails—it is a Show in itself. There was the old battle between Scotland and the West of England. Honours were divided. In the Truckles (6 Cheeses), Scotland claims first place, and the West of England takes second and third. In the Cheddars (4 Cheeses), the West of England claims first, third, fourth and fifth; while Scotland has to be content with second. In the Cheddars (20 Cheeses), Scotland is again to the fore with first place, and the “Fullwood and Bland” and “Viking” Cups, also second and third place; while the West of England gains fourth and fifth prizes.

The Judge reports that many of the Cheddar Cheeses were badly pressed and poor in condition, causing a looseness in texture, and bad from a selling point of view.

Colonial Cheddar (Coloured or Uncoloured).—Four Cheeses of not less than 60 pounds each is again a strong class of 37 entries. First, with the “Hansen” Trophy, and third prizes go to Ontario; while New Zealand takes second place. Canada sends 20 entries, South Africa six entries, Australia seven entries, New Zealand three entries, and East Africa one entry. The Judge reports the general standard as fairly good, but several lots of bad appearance as to the edges, &c., the crust round the top edge leading to much waste. Paraffin-waxing is of doubtful benefit, many merchants disapproving of it.

Cheshire Cheeses again were a great feature of the Show, and the four classes entailed the staging and judging of 384 cheeses. The Judges report desperately keen competition, and a very high standard of excellence all round; in many cases only one point dividing the winners, and in the Class for 20 Cheeses practically all the entries were deemed worthy of commendation. Mr. I. E. Jones, of Tarporley, won in the Class for Four Coloured Cheeses and carried off the “Fullwood and Bland” Cup for the best exhibit of Cheshire Cheese, and the Judge claimed this as the best exhibit of Hard-pressed Cheese, but was

overruled, and this trophy eventually went to the Cheddars in Mr. A. Harvey Stevenson's exhibit from Ayr, Scotland.

The Novice Class brought 14 entries, and is highly spoken of by the Judges. It was won by Mr. J. Huntback, of Whitchurch, who also won in the Uncoloured Class. The deepest sympathy of the entire Council of the British Dairy Farmers' Association will go out to the Cheshire Cheese prize-winners, Messrs. H. O. Williamson, of Nantwich; Mr. F. Huntback, of Moor Hall, Aston; P. Sumner, of Wrenbury Frith; all of whom have lost their entire stocks through the dreadful cattle plague now so rampant in the Cheshire District.

Leicester Cheese brought only seven entries, the winners being the British Dairy Institute, Reading. The quality was somewhat irregular, and the first and second prize lots were only described as of "useful" quality. The appearance and general set up of most of the exhibits might be improved with a little more attention to pressing and finishing.

Again, the Class for Lancashire Cheese brought only seven entries, drawn almost entirely from the Lancashire district. It was a good class, with the prize-winners excellent and extremely close on number of points obtained.

There were nine entries in the Class for Derby Cheese, the quality of which was only medium. Lightness of texture and faulty flavour were the principal defects. First and second prize-winners (both going to the United Dairies, Ltd.), were typical of this type of cheese, being clean in flavour with a creamy texture, and the appearance left little to be desired; in fact both samples were very much alike. Makers of this type of cheese should, if possible, avoid tightness of texture, which is very often the result of over-acidity.

The Judge notes improved numbers in the Class for Factory Cheese, 18 in all. The quality, with two exceptions, was very irregular, and there is room for marked improvement, particularly as regards the flavour and general appearance of the cheese. Again he describes the first and second prize exhibits as "useful," and they won on flavour and texture. Factory Managers would be well advised to give greater attention to the pressing and dressing of their cheese, as an attractive appearance is essential in all milk products.

Double Gloucester was a very satisfactory class, with quite a good entry, considering that this type of cheese is not largely made. Again, the British Dairy Institute came out on top. Generally, the texture was right and the flavour mellow and characteristic, the winners being particularly fine, the second and third were also fine, but contained one inferior cheese. A little more care might be exercised in selection.

Single Gloucester, with seven entries, were particularly good, and the flavour all that could be desired, though some of the lots were a

little new and raw when bored. The Judge considered the class to be the best lot of Single Gloucesters that he has judged for many years, and a great improvement on similar classes in recent years.

The Class for *Caerphilly* (four Cheeses not exceeding 8 pounds each) brought 13 entries, not a large lot for this most useful type of cheese, for which one would like to see a greater demand, as it is one of which one can take a large amount at a meal and so increase the consumption of dairy produce, it being, perhaps, the type of British cheese which most nearly approximates to the Continental cheeses of which the public is in the habit of consuming larger amounts at one meal. It is very noticeable abroad that many of the Continental cheeses are soft and buttery, not so sharp as our varieties, and so there is a tendency to larger consumption. The *Caerphilly* Class was fairly uniform, nearly all the cheeses being of good quality.

Wensleydales (*Blue-moulded*) (*Six Cheeses*) brought only eight entries, and was not a very satisfactory class, not so good as at many previous Shows. The first prize-winners were, however, very fine, being of just the right flavour and good in colour and blue-veined. The second were also good, but a little stained in the body of the cheese. The other lots were only fair, and one lot really bad. This class does not improve, and compared with the blue-veined *Stilton* Classes is unsatisfactory.

In the Smallholder Pressed Cheese Classes, the Long-keeping Class contained three times the numbers of the Quick-ripening, but the Judge of the Quick-ripening lot reports a very mixed lot of cheese, and after the first three prize-winners they were poor, the flavour being faulty and the texture and keeping qualities poor. The Long-keeping Class is reported as favourable on the whole, a few rather dry in texture.

The Class for Small Cheddars (two Cheeses made at home, from 8 lbs. to 10 lbs. each), open to pupils who have attended County Travelling Cheese Schools during 1922 or 1923, brought 17 entries, and both first and second prizes went to Melksham. In the Small Cheddars there was a tendency towards over-acidity and dryness, possibly the result of an excessive use of "starter." In the similar Class for Small Cheshire there were only three entries, and none of them from the Cheshire district. The first prize cheese possessed all the characteristics of a fine Cheshire cheese, but the second prize lot were only medium.

In spite of increased prize money for the Inter-County Competition for the best collection of Smallholder Cheeses made by the persons who have received instruction in cheesemaking at a County Council Travelling Cheese School during 1920-23, only four entries were made. The Prize and Champion Shield went to Montgomeryshire, with Cornwall as Reserve. The winning lot were quite outstanding, with flavour of each variety fine and mild and the general attractiveness

very good indeed. In the rest flavours varied very much, and some very poor cheeses were sent.

Cream Cheese, made from Cream only, was well represented with 20 entries, the quality, on the whole, being excellent, but marketable appearance left much to be desired. The Unripened Soft Cheese Class, other than Cream Cheese, made direct from milk, brought 14 entries, with good prize-winners, but the remainder were disappointing, being weak and poor in flavour.

The Classes for Ornamental Butter each had four entries and the work was of a high standard, the first prize especially so.

BACON AND HAMS.

It is pleasant to report a large and increasing interest being taken in this section of the Show, though those classes where the credit goes direct to the curers, rather than to the producers of the pigs, were not well patronised, and one of these classes had to be cancelled. However, in spite of small numbers in these classes, the competition was keen and almost all the exhibits were exceedingly well turned out. The Herts and Beds Bacon Factory along with Messrs. Venner, of Reading, seem to have divided most of the prizes between them.

In the Inter-Breed Class there were six entries, which is a slight improvement on the two previous years. The Bacon was very nicely turned out and the Society owes much to Messrs. Harris, of Calne, for the great trouble they have taken over these classes. It may be well here to say that the aim of the British Dairy Farmers' Association in originating this kind of competition was not so much to place one breed above the others, as to encourage each Breed Society to lay special emphasis on the points which make for the production of prime bacon suitable for the London market and it is hoped that they may eventually lead to other societies starting similar competitions in other districts for bacon suitable to their particular needs. The British Berkshire Pig Society won the Cup with 12 beautiful sides, which were, however, considerably criticised as not being of the length and type that the curers really want. The Reserve and V.H.C. went to the Long White Lop-eared Pig Society, whose pigs one would expect to be of a very different type from those of the Berkshire.

In the Class for Two Bacon Pigs (Pedigree), owned and shown by individuals, there were 20 entries, viz., seven Gloucester Old Spot, three Essex, four Large White, two Wessex Saddleback, one Middle White, one Berkshire, one Essex White Shouldered, and one Large Black. Messrs. W. White, of Taunton, with Large Whites were placed first, with Lord Sherborne's Gloucester Old Spots Reserve and V.H.C.

Unfortunately, the Class for Bacon Pigs (First Cross) was started too late, and so had only two entries, the prize going to Lord Bledisloe for his Middle White and Large Black Cross which were run very close by Captain Beale's Middle White and Berkshire Cross.

A full report of the pigs as they reached the factory, their live and dead weights, &c., is included in another part of this Journal.

The Classes for Hams were not well filled, but brought some splendid hams, thoroughly well turned out.

BUTTER.

The entries of Butter have shown a steady progress since the end of the war and have now reached the respectable total of 401, which is, however, still far behind the 500 or 600 totals which were common some 10 or 12 years ago.

An entry of 26 in the Novice Class, open only to farmers, their wives, sons and daughters, occupying not exceeding 100 acres, and who have never won a prize in the Butter classes at any of the Association's Shows, gives good hope for the future, and the exhibits were distinctly good, though some improvement could be made generally in texture and appearance.

The 2-lb. Classes (the produce of Channel Islands Cattle and their Crosses), both with and without salt, were distinctly good as regards flavour and general appearance, but two samples showed threads of butter muslin when broken.

It is noteworthy that the Earl of Mount Edgcumbe is first in both these classes, and also in the Class for Butter made from Scalded Cream only, this, in spite of different Judges officiating.

Again in the 2-lb. Classes (the produce of Cattle other than the Channel Islands), Mrs. Mildon, of Rackenford, Devon, scores a double first and the Special Cup in the two classes, the Judges being different, and a second in the Scalded Cream Class. It does look as if these two makers had some skill to which others have not attained.

One of the Judges complains that in several instances the appearance of the butter had been spoiled by lack of proper packing. Another Judge calls attention to excess of moisture, but on the whole the butter in the 2-lb. Classes seems to have been highly creditable, and, taken generally, a good all-round lot.

It is difficult to consider the classes representing larger quantities of butter as entirely satisfactory and they do not appear to have fully recovered from the effects of the war. In no case do the entries run into double figures. They are sometimes designated as the "Commercial Classes," but are they truly "commercial"? Do they represent the style and quantity of butter that is required by the retailers of butter? The Council would welcome any suggestions likely to make this section of the Show more popular. The few that were sent in are reported on as good samples, and the proportion of entries that received an award was very high—in one case every one in the class received an award, which seems to imply that the small entries are not due to want of liberality on the part of the Council.

COLONIAL BUTTER.

One class for Salted Butter and one for Unsalted Butter were provided, and they brought 152 entries between them—a great contrast to the meagre entries in Home Produce Commercial Classes.

New South Wales provided 48 entries.

Queensland	„	28	„
South Australia	„	22	„
Victoria	„	23	„
South Africa	„	6	„
New Zealand	„	3	„
Quebec	„	14	„
Ontario	„	8	„

They made a very fine display and the Judges of the Unsalted Class found the Australian exhibits as good as can be expected at this time of year; no lot was outstandingly good, but the average very fair, only two or three lots really inferior.

The quality of the Canadian butter is fair, two lots specially standing out as worthy of commendation. Several lots of the Australian butter are much too high in colour for this market, perhaps this is difficult to avoid at this time of year. Sometimes the flavour is noted as “too pronounced.”

The Judge of the Salted Class did not consider the quality quite equal to those of some previous exhibits, but the general run of the butters was up to the general standard for this time of year.

New South Wales carried off first prize in both sections.

CREAM.

The Class for Clotted Cream had 16 entries. The prize-winners were good, but the general quality not up to standard, being weak in flavour, appearance, and colour. Nearly all the awards seem to have gone to Devonshire, leaving Cornwall somewhat in the background this year.

Cream, other than Clotted, was a good class of 17 entries, and the two prizes went to town dairies. The Judge suggests that the samples were put up too thick.

BOTTLED FRUIT.

The various exhibits in all classes were in most cases of a very high standard, doing the Exhibition much credit, and attracting a great deal of attention from the public.

In the new class for Women's Institutes, the workmanship lacked finish, and it is hoped that a great improvement will be shown next year.

The Demonstrations were as popular as ever, and should bear fruit in the future.

HONEY, &c.

This section is looking up again, and it appears to have been a comparatively good year, so the Judge found much encouragement in having such a fine lot of exhibits placed before him, all the classes being well filled and the quality good. There were only two disqualifications in the Extracted Honey Class, due to not being in accordance with the Colour Gauge, which is a great improvement on some previous years. The Class for Exhibits of a practical or scientific nature was better than usual, with six entries, but contained nothing of special interest except natural-grown pollen from the "Cedar Atlantica" tree for artificial feeding.

The Colonial Honey, although of very fine quality, would not compare with the Home product. Out of eight entries, seven came from Canada and one from Australia.

ROOTS, &c.

Again a very fine Show in itself.

Globe Mangolds brought 43 entries and contained some very fine specimens, but several cut hollow.

Golden Tankard Mangolds, not quite so popular, with 22 entries. A nice even lot, especially good for the season.

Intermediate Mangolds with 25 entries were certainly the best class. It is remarkable how many of the prizes for Mangolds go to Wales, especially round Cardiff.

The three classes for Swedes were well filled, the Purple Top being most popular. Some were very rooty and coarse, but on the whole a very fine lot. Here again Cardiff district is well to the fore, though one or two north country men get a look in.

In the Turnip Class with 19 entries, the winners come from Cornhill-on-Tweed, but the second and third again from Wales. Some cut rather badly.

In the Cabbage Class (eight entries), some of the exhibits had passed their best. The winners, drawn from near Chester, were the best ever seen by the Judge.

The eight entries in the Kohl-Rabi Class were easy to judge. The winners, coming from Reading, were quite outstanding.

Five entries formed the class for a Collection of Roots for Cattle-feeding in Winter. They were a most difficult lot to judge, all of them being magnificent.

The Gold Medal for the best collection of Colonial Dairy Produce went to the Government of Ontario, with the Commonwealth of Australia as Reserve, and the Government of Quebec highly commended. All three made excellent displays.

JUNKET-MAKING.

The Competitions in Junket-making continue to grow in popularity and brought very good entries. The resulting produce is very popular with the public and always finds a ready sale. The Junket used to be considered a delicacy—it is still that, but ought to be so popularised as to become an essential food. In the past it has been especially associated with Devonshire, but the Devonians were conspicuous by their almost complete absence from the contests. The work was done in a quick, clean, and methodical manner, but the flavour of the different junkets varied considerably. The Judge suggests that Competitors should have uniform rennet.

BUTTER-MAKING CONTESTS.

These were as popular as ever and added greatly to the interest of the Show. The work of the beginners was well up to the standard of former years and their keenness was very gratifying.

The open classes, both for men and women, were also good, but some must learn in such competitions to work to time. Also, some of the new competitors had not taken sufficient care in reading the instructions and conditions.

The finals in the Butter-making Competitions aroused great interest, Miss M. K. Stratton, of Pershore, Worcestershire, attaining to the first position in the class for first prize-winners of 1923, and Mrs. M. Pooley, of Shifnal, Salop, gaining the Championship and Gold Medal.

MILKERS CONTESTS.

Here a new arrangement was tried which met with partial success. During the 12 or 15 years that these contests have been held at the Dairy Show much has been done to encourage good milkers, and the competitions have been much appreciated, but the competitors have mainly been found amongst the Stock attendants who happened to be at the Dairy Show. It was felt that the British Dairy Farmers' Association should try to extend its influence over a wider field by encouraging more and better Milkmen Contests throughout the country, and so a carefully thought out scheme was drafted, whereby eventually only those who have been successful in their County Competitions at home will be allowed to compete at the London Dairy Show, thus making it more or less an Inter-County Competition. As Milkmen Contests in the various counties are not yet universal, it was not possible to adopt the scheme in its entirety, and a cross between the old and new schemes had to be put into force. It was generally felt that the new scheme is on right lines if the greatest possible number of competent Milkmen is to be encouraged, but it will, obviously, be some years before it gets into full working order.

The Special Classes of Cows (Single and Pairs of any Breed) maintained for the special purpose of providing suitable cows for these contests and which had not proved altogether satisfactory, were abolished and an effort was made to hire cows, all of which would be suitable for the purpose, but it was, in the end, found that arrangements could be made whereby cows already in the Show for other purposes could be made available, and so a saving of space was made.

The Judge reports that the competitors, as a whole, with the exception of the winners of each class, were hardly qualified to compete at the Dairy Show, though the Championship winners were quite worthy of the distinction they gained.

COW-JUDGING COMPETITIONS.

As in 1922, the Council again provided facilities for the "Daily Mail" Young Farmers' Clubs to compete for the "Agricultural Gazette and Modern Farming" Silver Challenge Cup and B.D.F.A. Medals.

In all six Clubs were represented by 17 representatives (the Kingsclere Club being one short) and the public were greatly impressed by the business-like way in which the competitors did their work, and they certainly surprised their Judges by their knowledge and capacity. They were asked to judge three Shorthorns, three Jerseys, and three Friesians, and to give their reasons for placing them in such and such order of merit. Eventually, the Hemyock Club from Devonshire was judged to be the winner, with 616 points against the Loughborough Club, which gained 607 points. The B.D.F.A. Silver Medal was won by Miss Joan Moore, of the Loughborough Club, with 246 points, and a Bronze Medal each by Miss May Banbury, of Kingsclere, and Miss Winnie Emery, of Hemyock. One is inclined to ask what were the boys doing to allow the girls thus to carry off all the medals, but then one remembers that successful judging depends on close attention to detail and girls are proverbially better than boys in this direction.

INTER-COLLEGE COW-JUDGING COMPETITION.

The British Dairy Farmers' Association for the first time carried to completion a project they have entertained for some years, viz., of offering a valuable Challenge Cup for competition in Cow-Judging amongst the students attending the various Agricultural Colleges and Farm Institutes. There were seven entries, representative of the most important Dairy-teaching centres, each having a team of three. Their business was to place in proper order three cows, each of three different dairy breeds, and to give their reasons for so placing them. The Judges report that, as a rule, the knowledge displayed by the competitors was sound and bore evidence of much careful teaching. The chief weakness in the judging seemed to be a tendency to work

by a purely score-card method, without first of all detecting the outstanding merits or de-merits of the different specimens. Some competitors for instance, would begin by contrasting the horns or eyes, or even the feet of the different specimens, missing out the obvious differences which were, or ought to be, evident at first sight. In experienced students, such as these are taken to be, ability to more readily find *main* differences and to sum-up the quality of three individual cows might reasonably be looked for, rather than a method which would be appropriate for beginners. The winning team was that representing University College, Reading, a team remarkably even and well matched; they all agreed in giving sound answers on main points. The Northamptonshire Farm Institute were second and Cumberland and Westmoreland Farm School third, this latter team including the student who obtained the highest possible marks.

A full report of the New Inventions is to be found in another part of this Journal.

THE DAIRY SHOW MILKING TRIALS OF 1923.

By G. S. ROBERTSON, D.Sc., F.I.C.

MR. F. J. LLOYD.—It would not be fitting to commence this report without a reference to the great loss the Milking Trial judges, and the competition itself, has sustained through the death of Mr. F. J. Lloyd, the Association's consulting chemist. For over 40 years Mr. Lloyd presided over the Milking Trials. He was present at their birth, nursed them through all their troubles until they became, not only the feature of the London Dairy Show, but the acknowledged premier Milking Trials in the country. Few can realise to the same extent as Mr. Lloyd's colleagues how great is the debt which is owing to him. No matter what the difficulties were Mr. Lloyd could be relied upon to find a method of overcoming them. Even after 40 years of Milking Trial competitions he never allowed himself to settle into a groove, but was constantly alive to the possibilities of improving the technique and organisation of the Trials. His colleagues express their admiration for the work he did and the organisation he created, and record their sense of personal loss.

Perhaps the fact that strikes one most in reading over the reports on previous Milking Trials is the persistent manner in which records are made and broken. The 1923 trials were no exception to the rule. It is a wonderful tribute to the courage of the British farmer to be able to record progressive records during one of the most trying years that the industry has ever had to face.

In order to facilitate comparison the main items of interest are set out below under their respective headings.

Number of Entries.—491 cows and 41 goats, compared with 447 cows and 43 goats in 1922. The entry of cows constitutes a record, being 44 greater than the previous record established in 1922. The entry of goats was only two below the record figure of 1922.

Number of Competitors.—As was expected, the serious outbreak of foot and mouth disease seriously affected the number of actual competitors. 214 cows and 11 goats took part in the trials. The number of cows competing represented 43·5 per cent. of the entries compared with 56·6 per cent. in 1922 and 64·5 per cent. in 1921. The number of entries and competitors in each class of cows and heifers is given in Table 1.

Number of Samples Analysed.—450 in 1923 compared with 576 in 1922 and 500 in 1921.

Number of Breeds Represented.—12 distinct breeds were represented, and had the Welsh Black Class come forward as last year a new record would have been set up. The Blue Albion Breed took part in the Milking Trials for the first time, and although their performance must have been far from satisfactory to their supporters it is to be hoped that they will not be discouraged.

Highest Points gained by a Cow.—A pedigree Shorthorn cow obtained the highest number of points in the Milking Trials in 1923 (167·1). 3 other cows, namely, one non-pedigree Dairy Shorthorn and two British Friesians gained higher points than the cow which secured the highest points in 1922 (158·3). The record of 178·3 points set up in 1921 still holds.

Highest Milk Yield.—The highest yield on the average of the two days' milking was 87 lbs. given by a British Friesian cow milked three times a day. This cow actually reached the high level of 90 lbs. on the second day of the trials. 87 lbs. is the highest average yield ever obtained at the Dairy Show and compares with 75·7 in 1922, 82·3 lbs. in 1921, and 75·3 lbs. in 1920. Only a year or two ago the rather captious critic could be heard to observe that although much was read in the agricultural press of the 8, 9, and 10 gallon cow, it was curious that none of these phenomenal milkers had made their appearance at the Dairy Show. Although it is fitting to record the progress which has been made in the evolution of the heavy milking cow, it is but right to draw attention to the quality aspect of the question. Thus 50 points were deducted for poor quality from this year's heaviest milker. Milked three times a day, she was below standard for fat on two occasions and in solids not fat at all three milkings.

A new feature of the 1923 Show was the class for cows milked three times a day—a feature which shows the trend of events in the evolution of the dairy cow.

The development of the heavy milking cow is of great practical importance and it would be unwise to disparage the efforts which are being made towards this end. At the same time it may be reasonably asked whether our present knowledge of animal nutrition will enable us to maintain not only the quality of the milk from heavy milkers, but the constitutions of the cows themselves. If not, there will come, besides other troubles, an increasing tendency towards the production of unhealthy and constitutionally unsound calves—a result which would defeat the object in view.

Number of Classes.—The number of classes in the trials was 29—a record number compared with 26 in 1922.

Compared with previous years, the butter-fat averages (see Table 5) were very high. Some exceptionally high individual figures were also obtained. Cow 29 (Pedigree Dairy Shorthorn) gave milk containing

5.49 per cent. of fat in the morning and 9.90 per cent. in the evening ; whilst the milk of cow 99 (non-pedigree Dairy Shorthorn) contained 7.78 per cent. of fat in the morning and 7.08 per cent. in the evening. The accuracy of the results is beyond question, and it is, therefore, all the more desirable to ascertain the reason for the high average figures. The only circumstance which varied from last year was that the samples, to the surprise of the herdsmen, were taken on the Sunday—the first day of the trials. It would almost seem, therefore, that all the “feeding wrinkles” for high butter fat figures which are said to be practised are without the desired effect and tend rather in the opposite direction.

One other result remains to be recorded—the whole of the class awards and the majority of the cup and challenge trophy results were out by Wednesday evening, the second day of the Show.

Dr. T. J. Drakeley was responsible for all the analytical work of the Trials and Mr. Alexander Hay, N.D.A., of the East Anglian Institute of Agriculture, Chelmsford, filled the vacancy thus created in the staff of Milking Trial judges.

NOTES ON THE CLASSES.

Class 1. Pedigree Dairy Shorthorn Cow over 5 years old.—Entries 29 ; present 17. The improvement noted in 1921-22 has been fully maintained. In the report on the 1920 Trials the writer drew attention to the poor performance of the Pedigree Dairy Shorthorn Classes, and expressed the hope that the “knowledge that only 6 out of 18 competitors in two Dairy Shorthorn classes succeeded in reaching their class standards” would “spur the breeders of pedigree Dairy Shorthorns on to better achievements in the future.” It is a pleasure to be able to record a continuous and marked improvement.

How great has been the advance is shown by the following figures :—

		No. of Competitors.	Per cent. reaching Class Standard.	Average Points gained by Class.	Class Standard.
1920	...	9	33.3	97.4	100
1921	...	21	66.6	103.9	100
1922	...	20	60.0	107.7	100
1923	...	17	70.6	114.4	100

The first prize in the class, the B.D.F.A. Gold Medal, the Desborough Cup and the Barham Cup were won by Major S. P. Yates's cow, “Clara's Beauty” (No. 22) with 167.1 points—a record for the class. Major Yates's “Foggathorpe Primrose” (No. 23) was second with 158.1 points and reserve for the Desborough Cup.

Class 2. Pedigree Dairy Shorthorn Cow over 3 and under 5 years.—Entries 24 ; Present 7. The number of competitors was small, but the quality was good—only one cow failed to reach the class standard. Mr. L. Hignett's “Longhills Melody” (No. 51) was first with a score

of 121.9 points and also secured the Shorthorn Association's Extra Prize. Mr. T. L. Martin's "Highworth Felicity 3rd" (No. 39) was second with 114.8 points. The class obtained an average of 100.9 points—standard 83.

Class 3. Pedigree Shorthorn Heifer.—Entries 37; Competitors 13. The improvement recorded last year has not been maintained. Seven out of the 13 competitors failed to reach the class standard (66 points). The average points gained by the class are down from 72.1 in 1922 to 67.2 in 1923. Mr. J. G. Peel's "Longhills Dewberry" (No. 73) was first in the class with 90 points, and Mr. T. L. Martin's "Thrup Dairymaid" (No. 69) second with 81.4 points. These two heifers tried for the Shorthorn Association's Extra Prize.

Class 4. Non-Pedigree Dairy Shorthorn Cow.—Entries 27; Competitors 11. There was a slight improvement in this class compared with last year, but the performance was far from satisfactory. Six out of the eleven competitors failed to reach the class standard of 110.

The need for improvement is well shown by the following figures:—

		No. of Competitors.	Per cent. reaching Class Standard.	Average Points gained by Class.	Class Standard.
1920	...	11	54.5	111.8	110
1921	...	14	71.4	117.5	110
1922	...	11	54.5	108.1	110
1923	...	11	54.5	111.1	110

The slight improvement in the average points gained by the class was due to the excellent performance of Mr. A. B. Croxon's "Spot" (No. 97) which was an outstanding winner in the class with 166.1 points—28 points above the second prize winner, Mr. John Goodman's "Marion" (No. 109). Mr. Croxon's "Spot" had the remarkable record of being reserve for the following—B.D.F.A. Gold Medal, Barham Cup, Shirley Cup, Spencer Cup, and for the Shorthorn Association's Extra Prize.

Class 5. Non-Pedigree Dairy Shorthorn Heifer.—Entries 16; Competitors 9. There was a welcome increase in the number of competitors—also an improvement in the quality. Only one heifer failed to reach the class standard of 73 points. The average points obtained by the class was 88.7. Mr. Nathan Hardman's "Sally" (No. 119) was an easy winner with 116.5 points, whilst Mr. Allen Cheney's "Cherry 5th" (No. 122) was second with 101.4 points.

Class 6. Lincolnshire Red Shorthorn Cow.—Entries 18; Competitors 10. The improvement which has been noted in this class during the past three years was maintained. The average score—114.2 points—was a class record. Thus for three years running, namely, 1921, 22, and 23, the class record for average points has been broken. Only one animal failed to reach the class standard of 100 points and only by a fraction of a point. The first and second prizes went to

Messrs. John Evens & Son for "Burton Amy 7th" (No. 146) and "Burton Ruby Spot 15th" (No. 149) respectively, their points being 137.6 and 136.2.

Class 7. Lincolnshire Red Heifer.—Entries 15; Competitors 7. Only one heifer failed to reach the class standard of 66 points. The average points obtained were 88.9, a distinctly creditable performance. Mr. J. O. Burchnall's "Flamville Dairymaid 172nd" (No. 166) carried the class honours with 109 points, Mr. Arthur Barber's "Retford Russett 2nd" (No. 158) being second with 94.3 points.

Class 8. British Friesian Cow over 5 years old.—Entries 21; Competitors 4. There was a very poor turn out in this class. Two out of the four competitors failed to reach the class standard of 110 points. The average points obtained were 122.9. Mr. G. Holt-Thomas secured first and second prizes with "Kingswood Myrtle-leaf" (No. 181) and "Blackmore Ena 2nd" (No. 180) respectively, their scores being 154.7 and 144.8 points.

Class 9. British Friesian Cow over 3 and under 5 years old.—Entries 25; Competitors 11. This class was better supported than the preceding one. The average daily milk yield of the class was 58.7 lbs., a highly creditable figure. 54.5 per cent. of the animals lost points for quality of milk—a far from satisfactory state of affairs. Mr. Wm. Twentyman's "Winchester Mollie" (No. 196) was an easy first with 142 points in spite of the fact that she lost 10 points for quality. Mr. Seton de Winton's "Frank's Bullseye" (No. 197) was second with 129.3 points.

Class 10. British Friesian Heifer.—Entries 14; Competitors 2. The class was badly supported. One of the two competitors failed to reach the class standard of points.

Class 12. South Devon Cow.—Entries 5; Competitors 3. Although the entries were few the quality was good. The three competitors put up the best performance that has yet been made by this breed at the Dairy Show. The average points for the class—114.9—constitutes a record. The first prize winner was "Netton Lilly" (No. 232) with 139.2 points, the property of Mr. Walter Hunt, whilst Mr. George Banbury's "Milkaway" (No. 235) was second with 109 points.

Class 13. Devon Cow.—Entries 7; Competitors 5. This class enjoyed at least the merit of being consistent. The results in 1923 were almost identical with those of the two preceding years. Only one of the competitors failed to reach the class standard. Mr. N. D. Lupton secured first and second prizes with "Compton Handsome" (No. 237), points 125.3, and "Wynford Molly" (No. 238), points 111.5.

Class 14. Red Poll Cow over 5 years old.—Entries 14; Competitors 6. The class was a decided improvement on the previous year. None of the cows lost points for quality, whilst only two failed to reach the class standard. The average points obtained were 116.7 compared with 91.5 in 1922 and 83 in 1921. There was a close fight for the first

prize, there being only 0·6 points between the first and second animals. The first prize was secured by Mr. J. B. Dimmock's "Gressenhall Wild Girl" (No. 253) with 142·7 points. This cow also carried off the National Milk Cup with 152 points per 1,000 lbs. live weight, 13 points more than the reserve cow. "Sotterley Winsome" (No. 257), the property of Mr. S. Scrimgeour, was second in the class with 142·1 points.

Class 15. Red Poll Cow over 3 and under 5 years old.—Entries 16; Competitors 9. In this class also the breed showed a welcome improvement over the previous year. The average points obtained were 95·5, compared with 76·4 in 1922 and 95·1 in 1921. Only two out of the nine competitors failed to reach the class standard. Two cows lost points for poor quality milk, compared with six in the previous year. Capt. Allan Richardson's "Seven Springs Lupine" (No. 266) was first with 113·9 points and Messrs. C. F. Newton & Sons' "Soham Rubicon" (No. 267) second with 111·9 points.

Class 16. Red Poll Heifer.—Entries 16; Competitors 6. Again a distinct improvement over the previous year has to be recorded. The average points gained were 72·0, compared with 64·7 in 1922. The quality of all the milk was above standard and only one competitor failed to reach the class standard of points. Capt. Allan Richardson's "Seven Springs Berry" (No. 283) was first with 94·6 points and The Earl of Lonsdale's "Lowther Almond" (No. 274) second with 85·9 points.

Class 17. Blue Albion Cow.—Entries 16. Competitors 2. This was a very disappointing class. Neither of the competitors succeeded in reaching the class standard of points. The average points gained, 78·3, being 21·7 below the standard (100).

Class 19. Ayrshire Cow.—Entries 14; Competitors 6. Undoubtedly the outstanding feature of the 1923 Dairy Show was the excellence of the two Ayrshire classes. It speaks well for the keenness and enthusiasm of the Ayrshire Breeders that five out of the six competitors in this class came from North of the Tweed. The average points gained were 128·5—38·5 above the class standard and a record for the class. The class also had the distinction of giving the most milk per 1,000 lbs. live weight, the figures being 48·9 lbs. for the Ayrshire Cow, 47·8 lbs. for the Friesian Cow class, and 43 lbs. for the Red Poll Cow class. The Ayrshire Cow class also gained more points per 1,000 lbs. live weight than any other class, the figures being 113·6 for the Ayrshire, 106·8 for the Jerseys, and 101 for the Red Poll. Messrs. A. & A. Kirkpatrick's "Barr Amelia" (No. 316) was first with 150·3 points, a record for the breed, and also secured the coveted Spencer Cup and the Rowallan Cup offered by the Ayrshire Cattle Society. Mr. A. Y. Allan's cow, "Aitkenbar Kate 3rd" (No. 306), was second in the class with 142·8 points.

Class 20. Ayrshire Heifer.—Entries 18; Competitors 10. This class was a strong one and the performance excellent. The average points gained were 87·6—27·6 points above the class standard of 60

points. The first prize winner was Mr. A. Y. Allan's "Aitkenbar Winnie" (No. 321) with 111·8 points, and the second prize winner "Cargen Holm Maud 16th" (No. 329), the property of Major C. Randolph Dudgeon, M.P.

Class 21. Guernsey Cow over 5 years.—Entries 7; Competitors 4. This class fell far short of the high standard set in previous years. Three out of the four competitors failed to reach the class standard of 85 points—a standard which is admittedly low compared with that of the Jersey Breed.

Class 22. Guernsey Cow over 3 and under 5 years. Entries 11; Competitors 6. This was a far superior class. All the animals obtained points exceeding the class standard of 71. The average yield of milk was only 3·6 lbs. less than the corresponding Red Poll class and 6·5 lbs. less than the corresponding Dairy Shorthorn class. Lady Sophie Scott's "Dene Sundial" (No. 348) secured first prize (112·6 points) and the Stagenhoe Cup. Sir E. A. Hambro's "Florrie 2nd of the Brecque" (No. 346) was second in the class with 104·3 points.

Class 23. Guernsey Heifer.—Entries 14; Competitors 2. A poor class; one of the two competitors failed to reach the class standard of 56 points.

Class 24. Jersey Cow.—Entries 41; Competitors 22. This class is consistently a numerically strong one. Ten out of the twenty-two competitors failed to reach the class standard of 90 points. This, however, is not surprising in view of the high standard set. Thus although the average Jersey cow is at least one hundredweight lighter than the average Guernsey, the Standard for the class is 5 points higher, and 10 points higher than for the Kerry Cow class, which is on the average half a hundredweight heavier, whilst it is identical with that of the Ayrshire, which is two and a half hundredweights heavier. Mr. Grosvenor Berry's "Negundo" (No. 373) was first with 119·9 points and reserve for the National Milk Cup. The second prize winner was Mr. R. W. Carson's "Diana Rose" (400) with 119·4 points. Reference to Table 1 shows that this class gained the second highest average points per 1,000 lbs. live weight.

Class 25. Jersey Heifer Born in Great Britain or Ireland.—Entries 25; Competitors 12. The class was a good one although not quite up to the high level of the previous year. Three competitors failed to reach the class standard. Mr. Grosvenor Berry's "Golden Raspberry" (No. 413) was first prize winner with 91·3 points and Mr. R. Bruce Ward's "Golden Madeira" (No. 420) second with 87·4 points.

Class 26. Jersey Heifer (born in Channel Islands).—Entries 14; Competitors 4. Although the competitors were few they were of good quality. All four animals reached the class standard. Miss Hayes Sadler's "Zaffarine" (No. 449) was first with 75·2 points and Mr. J. H. N. Robert's "Le Grand Rue Mistress 2nd" (No. 440) second with 74·3 points.

Class 27. Kerry Cow.—Entries 17 ; Competitors 7. On the whole this was a better class than last year, although it has to be recorded that three out of the seven competitors failed to reach the class standard. The first prize cow, "Flora of Carton" (No. 464), the property of Messrs. Zambra and Williamson Milne, was an outstanding animal with a score of 114·8 points—a record for the class. "Cowslip of Carton" (No. 450) and "Buckhurst Elphin" (No. 456), the property of Lieut.-Col. W. Grant Morden, M.P., and the Theosophical Educational Trust Company, Limited, respectively, were second equal with 94·5 points.

Class 28. Kerry Heifer.—Entries 10 ; Competitors 4. For the second year in succession only one animal reached the class standard of 53 points. The first prize—the only award in the class—went to "Emerald of Warren" (No. 471), the property of The Theosophical Educational Trust Company, Ltd.

Class 29. Dexter Cow.—Entries 8 ; Competitors 4. For the second year in succession only one of the cows exhibited in this class reached the class standard of 70 points. Mr. Alfred C. King's "La Mancha Madeline" (No. 479), with 79·0 points, was awarded the first prize and also the "Nutt" Challenge Cup.

Class 30. Dexter Heifer.—Entries 7 ; Competitors 4. This class was comparatively much better than the cow class. Only one animal failed to reach the class standard of 46 points. Mr. Alfred C. King's "Braishfield Black Tulip" (No. 491) was the class winner with 61·5 points, "Fillongley Forest Flower" (No. 488), the property of the Ratcliffe Herd of Pedigree Dexters, being second with 48·5 points.

Class 31. Cows milked 3 times a day.—Entries 7 ; Competitors 5. All the competitors in this class were pedigree British Friesian Cows. Two of the cows equalled or exceeded the 80 lbs. level, one of them giving in 24 hours the high yield of 90 lbs., although the average for the two days was only 87 lbs. The yield of the other three competitors was not exceptional. Two out of the five cows lost points for quality—one cow losing as many as 50 out of a possible loss of 60 points. The first prize went to Lord Rayleigh for "Terling Warner 3rd" (No. 169) with 166 points, and the second prize to Mr G. Holt-Thomas for "Beccles Silver Queen" (No. 183) with 164·8 points.

Class Standard Points.—One of the impressions gained on looking through the report of the milking trials for the past few years is the uniformly poor performance of the smaller breeds. If, however, attention is directed to the average live weight figures of the various breeds it is difficult to resist the conclusion that the class Standard Points are relatively much higher for the smaller breeds than for the heavier. Whilst it may not be fair to compare on a live weight basis the milking capacities of the dual purpose breeds with those of the essentially Dairy Breeds, it is fair to assume that the class Standard Points of the essentially Dairy Breeds, *e.g.*, Ayrshire, Guernsey, Jersey, Kerry and Dexter, should bear a definite relationship to their respective average live weights.

In the following table the class Standard points for the breeds mentioned have been calculated on a live weight basis, taking the Ayrshire standard of 90 points as the basis of comparison. The Standards so calculated are compared with those at present in use. (It is worthy of note that the difference between the Ayrshire class Standard points (90) and the non-pedigree Dairy Shorthorn class Standard points (110) is approximately in proportion to their live weights.)

BREEDS.	No. of Animals.	Variation in average Live Weight 1920-1923 (4 years).	Average Live Weight.	Class Standard Points. Points calculated on Live Weight basis using Ayrshire Cow as Standard.	Actual Class Standard Points.
		lbs.	lbs.		
Ayrshire Cow	21	1,041—1,136	1,075	90	90
*Guernsey „	30	972—1,118	1,030	86	85
Kerry „	42	792— 893	873	73	80
Jersey „	82	832— 852	839	70	90
Dexter „	18	651— 780	707	59	70

* Over 3 years and under 5 years old Class not included.

It will be seen from the above table that if the class Standard Points (90) for the Ayrshire Cow is assumed to be correct, then those for the Guernsey are, on a live weight basis, quite fair. For the Kerry, the Jersey and the Dexter, the B.D.F.A. class Standard Points are far too high, particularly so in the case of the Jersey Cow. On the average the Jersey Cow is 178 lbs. lighter than the Guernsey, whilst her class Standard Points are 5 higher. There would appear to be a good case for reducing the class Standard Points for the Kerry Cow to 75, for the Jersey to at least 75, and for the Dexter Cow to 60.

CHALLENGE CUPS AND TROPHIES.

Each year the interest in the Challenge Cups and Trophies increases. For the past three years the British Friesian supporters have carried off the more coveted interbreed trophies. It was quite evident even in the early stage of the Trials that the competition was to be of the keenest and that a determined effort was being put up by the various breeds to carry off the interbreed honours.

The Challenge Cups, which are awarded annually, and the conditions attached to them are set out below.

(1) *The "Barham" Challenge Cup*, awarded to the owner of the cow gaining the greatest number of points in the Milking Trials.

(2) *The "Spencer" Challenge Cup*, awarded to the owner of the best Dairy Cow in the Show, gaining the greatest number of points by Inspection, Milking Trial and Butter Test.

(3) *The "Shirley" Challenge Cup*, awarded to the owner

of the cow giving the greatest weight of milk in the Milking Trials, such milk to contain not less than 3 per cent. of fat and 8.5 per cent. of non-fatty solids.

(4) The National Milk Cup, awarded to the owner of the cow or heifer of any breed gaining the greatest number of points per 1,000 lbs. live weight.

In 1920, 21, and 22, the first three of the above Cups were carried off by representatives of the British Friesian Breed, but this year the honours were more evenly distributed.

The Barham Cup went to Major S. P. Yates's Pedigree Shorthorn, "Clara's Beauty" (No. 22), which, in spite of losing 10 points on account of her morning's milk falling below standard, finished with the very creditable total of 167.1 points, a figure which has only been beaten on two previous occasions. The Reserve, Mr. A. B. Croxon's "Spot" (No. 97), a non-pedigree Dairy Shorthorn, was a close runner up with 166.1 points.

The Spencer Cup was carried off by Messrs. A. & A. Kirkpatrick's Ayrshire Cow, "Barr Amelia" (No. 316), Mr. A. B. Croxon's non-pedigree Dairy Shorthorn, "Spot" (No. 97), being Reserve.

The Shirley Cup. Major S. P. Yates's Pedigree Dairy Shorthorn Cow, "Bright Darling" (No. 21), gave the greatest yield of milk, 69.8 lbs., containing not less than 3 per cent. of fat and 8.5 per cent. solids not fat, and to it was awarded the Shirley Cup. Mr. A. B. Croxon's non-pedigree Dairy Shorthorn, "Spot" (No. 97), was Reserve.

National Milk Cup.—The National Milk Cup is a new feature of the Dairy Show and introduces an additional factor into the Trials, namely, live weight and its relationship to the points gained. The awarding of the Cup entails a great deal of work inasmuch as the points per 1,000 lbs. live weight must be worked out for every cow competing in the Trials. In spite of this fact, the judges welcome the inauguration of the new award as a step in the right direction and one which is calculated to focus attention on an aspect of milk production which is often lost sight of.

The Cup went to a representative of the Red Poll breed, namely, Mr. J. B. Dimmock's "Gressenhall Wild Girl" (No. 253) with 152 points per 1,000 lbs. live weight. "Gressenhall Wild Girl" is an outstanding cow. Her live weight was only 944 lbs., she had been 120 days in milk, yet during the Trials she gave an average of 59.1 lbs. of milk containing 3.97 per cent. fat in the morning and 5.22 per cent. in the evening. She was first in her class with 142.7 points.

The Reserve was Mr. Grosvenor Berry's Jersey Cow, "Negundo" (No. 373), with 139 points per 1,000 lbs. live weight.

The Bledisloe Bowl is awarded to the Breed Society adjudged to have the best exhibit of good all-round Dairy Cows. The cows to constitute each representative breed team are the first six cows in the Milking Trials, provided that such animals have been considered

by the Inspection Judges to be typical specimens of their respective breeds. In judging for the Bledisloe Bowl the inspection points, which are double those given in the Spencer Cup Competition, are added to the Milking Trial points gained by the six cows constituting each team. Nine teams competed, compared with ten in 1922. The results are set out in the accompanying table:—

Pedigree Shorthorns.			Non-Pedigree Shorthorns.			Lincolnshire Red Shorthorns.		
Cat. No.	Insp'ct'n Points.	Milking Trial Points.	Cat. No.	Insp'ct'n Points.	Milking Trial Points.	Cat. No.	Insp'ct'n Points.	Milking Trial Points.
22	—	167.1	97	—	166.1	146	—	137.6
23	—	158.1	109	—	137.6	149	—	136.2
21	—	152.3	110	80	133.0	141	—	119.5
25	100	135.3	104	100	130.9	138	—	118.0
14	—	131.2	98	90	125.0	137	70	112.3
28	—	131.3	105	—	108.8	142	80	108.3
Total	975.3		Total	1,071.4		Total	881.9	

British Friesians.			Red Poll.			Ayrshire.		
Cat. No.	Insp'ct'n Points.	Milking Trial Points.	Cat. No.	Insp'ct'n Points.	Milking Trial Points.	Cat. No.	Insp'ct'n Points.	Milking Trial Points.
181	—	154.7	253	—	142.7	316	100	150.7
180	—	144.8	257	100	142.1	306	90	142.8
196	—	142.0	246	—	118.9	318	—	139.1
197	70	129.3	266	—	113.9	317	80	131.6
212	—	125.7	267	80	111.9	310	70	127.4
209	—	123.7	255	70	104.1	319	—	79.9
Total	890.2		Total	983.6		Total	1,111.5	

Guernsey			Jersey.			Kerries.		
Cat. No.	Insp'ct'n Points.	Milking Trial Points.	Cat. No.	Insp'ct'n Points.	Milking Trial Points.	Cat. No.	Insp'ct'n Points.	Milking Trial Points.
348	80	112.6	373	—	119.9	464	100	114.8
338	70	107.7	400	100	119.4	450	80	94.5
346	100	104.3	372	—	108.0	456	70	94.5
351	70	102.3	391	—	104.7	457	—	84.3
347	—	92.7	407	90	104.5	453	—	75.1
353	—	90.4	374	—	104.5	451	—	73.9
Total	930.0		Total	851.0		Total	787.1	

The Trophy goes this year to the Ayrshire Cattle Society, whose team scored 1,111·5 points, the Reserve being the Non-Pedigree Dairy Shorthorn team with a total of 1,071·4 points. The award was a popular one, the uniform excellence of the team combined with the fact that the exhibitors had to face and overcome all the difficulties associated with long distance travel, making it deservedly so.

It cannot, however, be said that the award of this important Trophy is yet on a satisfactory basis. The method of awarding Inspection points tells much in favour of those breeds with few entries and against those with a big entry. Again the decision that cows milked three times a day may not compete for any of the Trophies told very heavily this year against the Friesian breed; particularly as the cows milked three times a day were eligible to compete for Inspection in their breed classes. In the case of the Friesians the first prize and the third prize and the V.H.C. Cow on Inspection were ineligible for the team on account of this ruling. But for this fact the Friesian breed would have retained this much coveted Trophy.

The Gold Medal offered by the Association to the owner of the animal gaining the highest points in the Milking Trials was awarded to Major S. P. Yates for his exhibit, "Clara's Beauty" (No. 22), Mr. A. B. Croxon being Reserve with "Spot" (No. 97).

Robert L. Mond Special Prize for two animals the progeny of any particular bull. Provided the two animals compete in the Milking Trials, win a prize or commendation in their class, or are certified true to type by the Class Judge—in adjudicating only the points gained above the class standard count. In the case of any animal falling below the class standard, the points so lost are deducted from the total of the other animal.

Winner, Ayrshire Bull "Thornhill Mount Royal" (No. 1914), the property of Major C. Randolph Dudgen, Dumfries. Reserve and Countess De La Warr's Prize, Lincoln Red Bull "Curliou Nonsuch" (10630), the property of John Evan & Sons.

Details of points gained :—

		Points in Milking Trials.	Class Standard.	Balance.	Average.
Ayrshires	No. 327 ...	102·5	60	42·5	45·65
"	" 329 ...	108·8	60	48·8	—
Lincoln Red	" 145 ...	103·9	100	3·9	18·75
"	" 146 ...	133·6	100	33·6	—

In view of the great interest taken in the inter-breed challenge cups and trophies, it may be of value to tabulate the awards.

		Breed of Winner.	Breed of Reserve.
<i>Barham Cup</i>	... ..	Pedigree Shorthorn (No. 22)	Non-Pedigree Dairy Shorthorn (No. 97)
<i>The Spencer Cup</i>	... ..	Ayrshire (No. 316)	Do. do.
<i>The Shirley</i>	... ..	Pedigree Shorthorn (No. 21)	Do. do.

	Breed of Winner.	Breed of Reserve.
<i>The National Milk Cup</i>	Red Poll (No. 253)	Jersey (No. 373)
<i>The Bledisloe Bowl</i> ...	Ayrshire Team ...	Non-Pedigree Dairy Shorthorn Team
<i>The B.D.F.A. Gold Medal</i>	Pedigree Shorthorn (No. 22)	Non-Pedigree Dairy Shorthorn (No. 97)

BREED COMPARISONS.

In 1920, with the object of collecting data giving a comparison of the performance of the various breeds, Table 1 was constructed. Since that date the table has been continued and this year two new columns have been added, one giving the yield of milk per 1,000 lbs. live weight for each breed, and the other the average points gained by each breed per 1,000 lbs. live weight. The question "Which breed did best at the Dairy Show" may be answered in four ways:—

1. By naming the breed which gave the greatest average yield of milk.

2. By naming the breed which gave the greatest average yield of milk per 1,000 lbs. live weight.

3. By naming the breed which obtained the highest average number of points.

4. By naming the breed which obtained the highest average number of points per 1,000 lbs. live weight.

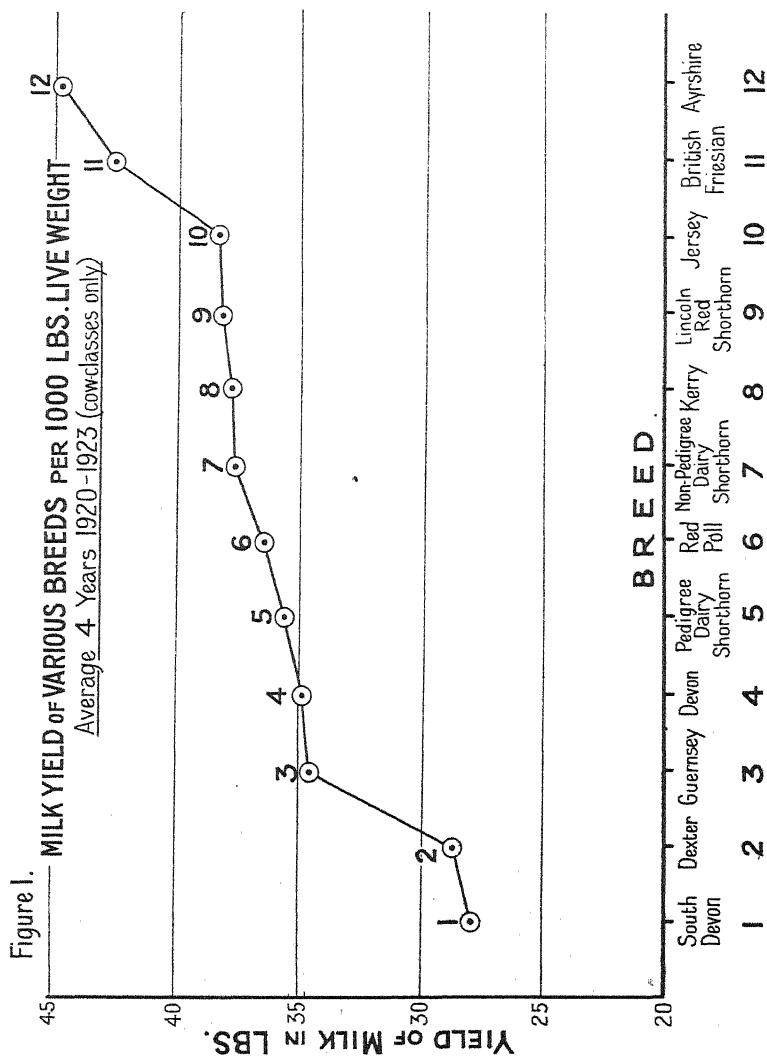
Below the various breeds are set out in their order of merit according to the above four methods:—

COW CLASSES.

Average Points per 1,000 lbs. Live Weight.	Average Points.	Yield of Milk per 1,000 lbs. Live Weight.	Average Yield.
Ayrshire	Friesian	Ayrshire	Friesian
Jersey	Ayrshire	Friesian	Lincoln Red Short- horn
Red Poll	Red Poll	Red Poll	Red Poll
Kerry	Pedigree Shorthorns	Kerry	Pedigree Dairy Short- horns
Friesian	Lincoln Red Short- horn	Jersey	South Devon

The above results are interesting because they show how much depends upon the point of view.

As considerable interest is being taken in the question of the yield of milk per 1,000 lbs. live weight, the results for the past four years have been summarised in the following tables and plotted graphically in Fig. 1.



Milk Yield of Various Breeds per 1,000 lbs. live weight.
Average 4 years (1920-23), Cow classes only.

BREED.	Average Live Weight.	Average Yield of Milk.	Average Yield of Milk per 1,000 lbs. Live Weight.
	lbs.	lbs.	lbs.
Ayrshire	1,075	48·0	44·6
British Friesian	1,356	57·3	42·3
Jersey	839	32·0	38·1
Lincoln Red Shorthorn ...	1,358	51·6	38·0
Kerry	873	32·9	37·7
Non-Pedigree Dairy Short- horn	1,351	50·6	37·5
Red Poll	1,147	42·6	36·3
Pedigree Dairy Shorthorn	1,342	47·7	35·5
Devon	1,278	44·5	34·8
Guernsey	991	34·3	34·6
Dexter	707	20·3	28·7
South Devon	1,586	44·2	27·8

The table shows the Ayrshire to be the heaviest milking cow per 1,000 lbs. live weight, followed by the British Friesian, the Jersey, the Lincoln Red Shorthorn, the Kerry, and the Non-Pedigree Dairy Shorthorn in the order named. If quality of milk is taken into account the superiority of the Ayrshire over the Friesian as a Dairy Cow is even greater than appears from the above table. A further interesting point is brought out by the table—the bottom places are not confined to the heavy beef breeds. The poor position taken by the Guernsey and the Dexter is somewhat surprising, and would seem to indicate that both these breeds are not being developed to the same extent as other milk breeds such as the Ayrshire and the Jersey.

TABLE I.

Class.	Description.	Number in Class.		Average Live Weight of Class.	Average Yield of Milk.	Yield of Milk per 1,000 lbs.	Average Fat.	Animals below Standard for Fat A.M. or P.M.	Animals losing Points for Quality of Milk.	Average Points lost by Class for Quality of Milk.	Points per 1,000 lbs. Live Weight.	Average Points gained by Class.	B.D.F.A. Standard Points for Class.
		Entered	Present in Show.										
Cows over 5 years old.													
1	Dairy Shorthorn	29	17	cwts. qrs. lbs. 12 0 16	lbs. 49.6	lbs. 36.5	% 4.69	% 11.8	% 23.5	2.9	84.1	114.4	100
4	Non-Pedigree Dairy Shorthorn	27	11	12 0 7	47.6	35.2	4.95	Nil.	9.1	1.8	84.4	111.4	110
6	Lincoln Red Shorthorn	18	10	12 2 19	49.9	35.2	4.50	10.0	10.0	1.0	79.9	114.2	100
8	British Friesian	26	9	12 2 8	47.8	47.8	3.83	22.2	33.3	10.0	95.9	135.0	110
12	South Devon	5	3	14 1 11	48.7	30.3	4.90	Nil	Nil	Nil	71.5	114.9	100
13	Devon	7	5	11 1 11	43.1	33.9	4.59	Nil	Nil	Nil	78.4	99.7	90
14	Red Poll	14	6	10 1 8	43.1	43.0	4.33	Nil	Nil	Nil	101.0	116.7	100
17	Blue Albion	16	2	10 2 17	35.2	20.5	4.25	Nil	Nil	Nil	65.6	78.3	100
19	Ayrshire	14	6	10 0 16	35.6	48.9	4.70	Nil	Nil	Nil	113.6	128.5	90
21	Guernsey	7	4	8 2 20	30.9	31.8	4.66	Nil	Nil	Nil	79.2	77.0	85
24	Jersey	41	22	7 2 1	33.2	39.5	5.54	Nil	Nil	Nil	106.8	89.8	90
27	Kerry	17	7	8 0 8	37.7	41.7	4.16	14.3	14.3	1.4	96.2	87.0	80
29	Dexter	8	4	6 0 7	23.4	34.5	3.49	25.0	25.0	2.5	86.9	59.0	70
Cows over 3 and under 5 years old.													
2	Dairy Shorthorn	24	7	11 3 1	48.1	36.5	4.16	14.3	14.3	4.3	76.6	100.9	83
9	British Friesian	25	11	12 0 2	58.7	43.7	3.66	36.4	36.4	6.4	87.2	117.4	91
15	Red Poll	16	9	10 2 9	45.2	38.1	4.39	22.2	22.2	3.3	80.6	95.5	83
22	Guernsey	11	6	8 2 6	41.6	43.4	4.62	Nil	Nil	Nil	101.3	97.0	71
Heifers.													
3	Dairy Shorthorn	37	13	9 3 25	29.2	27.0	4.48	Nil	Nil	Nil	60.2	67.2	66
5	Non-Pedigree Dairy Shorthorn	16	9	10 3 3	39.8	33.2	4.77	11.1	22.2	3.3	73.5	88.7	73
7	Lincoln Red Shorthorn	15	7	10 1 2	39.6	34.4	4.51	14.3	14.3	1.4	77.3	88.9	66
10	British Friesian	14	2	12 1 0	34.8	25.4	4.03	50.0	50.0	5.0	55.1	75.6	73
16	Red Poll	16	6	9 1 18	34.1	32.4	4.23	Nil	Nil	Nil	75.9	72.0	66
20	Ayrshire	18	10	9 0 13	39.5	38.7	4.35	Nil	10.0	1.0	85.8	87.6	60
23	Guernsey	14	2	7 1 8	38.3	46.7	3.95	50.0	50.0	5.0	94.5	77.5	56
25	Jersey (bred in Gt. Britain or Ireland)	25	12	6 2 16	26.0	34.9	5.26	Nil	Nil	Nil	95.2	70.8	60
26	Jersey (bred in Channel Islands)	14	4	6 2 24	26.5	35.2	5.61	Nil	Nil	Nil	89.9	67.8	60
28	Kerry	10	4	6 2 1	20.0	27.4	3.95	25.0	25.0	2.5	67.2	49.0	53
30	Dexter	7	4	4 2 26	16.6	31.3	4.76	Nil	Nil	Nil	87.9	46.6	46

* British Friesian Cows in Class 31 included.

TABLE II.—SHOWING NUMBER OF COWS TESTED, AVERAGE POINTS GAINED AND THE NUMBER OF COWS COMING UP TO THE SOCIETY'S STANDARD—1921 TO 1923

Class.	Description.	B.D. Points.	No. of Cows Tested.		Average Points Gained.		Number and Percentage of Cows above Standard.				Average Live Weight of Class.	
			1921	1922	1923	1921	1922	1923	%	%	1922	1923
1	Pedigree Dairy Shorthorn	100	21	20	17	103.9	107.7	114.4	66.6	12	70.6	12 1 8
2	Ditto (over 3 and under 5 years)	83	20	12	7	96.3	94.9	100.9	80.0	10	83.3	12 1 8
3	Ditto Heifers	66	15	11	13	61.6	72.1	67.2	5	6	85.7	11 3 1
4	Non-Pedigree Shorthorn	110	14	11	11	117.5	108.1	111.4	10	71.4	46.1	10 3 25
5	Ditto Heifers	73	6	4	9	73.5	73.0	88.7	5	6	45.4	12 0 7
6	Lincoln Red Shorthorns	100	8	8	10	105.3	113.2	114.2	8	33.3	88.8	10 3 3
7	Ditto Heifers	66	4	5	7	88.1	91.4	88.9	4	5	90.0	10 2 19
*8	British Friesians	110	10	14	4	133.6	120.2	122.9	8	100.0	85.7	12 1 2
9	Ditto (over 3 and under 5 yrs.)	91	4	16	11	114.9	92.6	117.4	4	100.0	50.0	12 2 27
10	Ditto Heifers	73	7	7	2	78.8	79.3	75.6	6	85.7	11 3 8	12 0 2
12	South Devons	100	5	5	3	104.4	100.5	114.9	2	40.0	10 3 7	12 1 0
13	Devons...	90	8	7	5	107.8	98.7	99.7	7	87.5	13 2 6	14 1 11
14	Red Polls	100	10	14	6	83.0	91.5	116.7	2	20.0	10 3 25	11 1 11
15	Ditto (over 3 and under 5 yrs.)	83	9	10	9	95.1	76.4	95.5	6	66.6	10 2 1	10 1 8
16	Ditto Heifers	66	8	10	6	69.5	64.7	72.0	5	62.5	7 7 7	10 2 9
17	Blue Albions	100	—	2	2	—	—	78.3	—	0	83.3	9 2 10
19	Ayrshires	90	2	13	6	106.7	95.7	128.5	2	100.0	—	10 2 17
20	Ditto Heifers	60	—	10	10	78.5	78.5	87.6	—	10	83.3	9 2 17
21	Guernseys	85	8	6	4	92.8	88.4	77.0	6	75.0	8 3 10	9 0 13
22	Ditto (over 3 and under 5 yrs.)	71	8	7	6	68.4	72.4	97.0	4	50.0	8 2 26	8 2 20
23	Ditto Heifers	56	7	5	2	67.1	62.2	77.5	7	100.0	8 3 23	8 2 18
24	Jerseys	90	19	24	22	76.3	79.7	89.8	3	15.7	7 1 11	7 1 6
25	Ditto Heifers, bred in Britain and Ireland	60	—	8	12	—	74.7	70.8	—	8	54.5	7 1 20
26	Ditto Heifers, bred in Channel Islands	60	—	4	4	—	66.8	67.8	—	3	75.0	6 2 16
27	Kerries...	80	16	8	7	76.5	75.3	87.0	5	31.2	6 2 0	6 2 24
28	Ditto Heifers	53	6	5	4	49.3	49.9	49.0	2	33.3	7 3 25	8 0 8
29	Dexters	70	5	4	4	57.8	59.7	59.0	2	40.0	6 2 23	6 2 1
30	Ditto Heifers	47	—	—	—	—	—	46.6	—	—	25.0	6 0 7
									2	50.0	—	4 2 26

* British Friesian Cows in Class 31 excluded.

TABLE III.—AVERAGE POINTS GAINED IN THE MILKING TRIALS EACH YEAR SINCE 1910.

Year.	Pedigree Short-horn Cows.	Pedigree Short-horn Cows, 3 to 5 years.	Pedigree Short-horn Heifers.	Non-Pedigree Short-horn Cows.	Non-Pedigree Short-horn Heifers.	Lincolnshire Red Cows.	Lincolnshire Red Heifers.	Jersey Cows.	Guernsey Cows.	Guernsey Heifers.	Red Poll Cows.	Red Poll Heifers.	Devon Cows.	South Devon Cows.	Ayrshire Cows.	Kerry Cows.	Kerry Heifers.	Dexter Cows.	British Friesian Cows.	British Friesian Heifers.	Welsh Black Cows.	Blue Aldon.
1910	109.5	109.4	109.4	109.4	109.4	99.4	—	90.5	77.9	—	95.5	—	—	107.2	74.6	89.1	—	—	—	—	—	—
1911	89.0	61.4	112.2	76.5	103.5	103.5	65.9	91.9	88.8	63.7	80.2	63.7	—	104.1	54.3	67.0	—	—	—	—	—	—
1912	98.0	40.3	124.4	79.4	95.5	95.5	67.3	94.5	71.0	75.9	96.3	75.9	—	110.6	79.6	93.3	—	—	—	—	—	—
1913	95.2	63.2	117.1	75.2	95.7	95.7	68.0	90.4	77.3	95.5	95.5	68.8	—	103.9	107.6	68.3	—	—	—	—	—	—
1914	106.5	62.4	106.9	73.6	96.3	96.3	67.7	89.8	85.5	127.6	127.6	65.5	—	108.5	—	—	—	—	—	—	—	—
1915	103.5	65.5	118.5	75.7	94.9	94.9	57.9	76.5	82.6	89.0	89.0	66.0	—	76.0	—	—	—	—	—	—	—	—
1916	95.2	59.6	95.0	89.2	98.4	98.4	68.3	80.3	84.6	88.8	88.8	78.0	85.6	—	—	69.6	—	61.3	92.3	80.7	—	—
1917	97.4	60.9	111.8	76.9	85.6	85.6	80.0	85.5	84.2	63.9	91.8	72.1	108.5	—	—	72.1	49.0	53.6	83.1	70.7	—	—
1918	103.9	61.6	117.5	73.5	105.3	105.3	88.1	76.3	92.8	67.1	83.0	69.5	107.8	104.4	106.7	76.5	49.3	57.8	133.6	67.0	—	—
1919	107.7	72.1	108.1	73.0	113.2	113.2	71.4	79.7	88.4	62.2	91.5	64.7	98.7	100.5	95.7	75.3	49.9	59.7	120.2	79.3	—	—
1920	107.7	72.1	108.1	73.0	113.2	113.2	71.4	79.7	88.4	62.2	91.5	64.7	98.7	100.5	95.7	75.3	49.9	59.7	120.2	79.3	—	—
1921	107.7	72.1	108.1	73.0	113.2	113.2	71.4	79.7	88.4	62.2	91.5	64.7	98.7	100.5	95.7	75.3	49.9	59.7	120.2	79.3	—	—
1922	107.7	72.1	108.1	73.0	113.2	113.2	71.4	79.7	88.4	62.2	91.5	64.7	98.7	100.5	95.7	75.3	49.9	59.7	120.2	79.3	—	—
1923	114.4	100.9	67.2	111.4	88.7	114.2	88.9	89.8	77.0	77.5	116.7	72.0	99.7	114.9	128.5	87.0	49.0	59.0	135.0	75.6	—	—
1924	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1925	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1926	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1927	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1928	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1929	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1930	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1931	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1932	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—
1933	100.6	86.6	60.8	112.1	77.0	98.8	71.3	85.5	83.3	61.9	93.9	69.4	100.1	101.9	86.4	76.4	51.1	54.6	101.3	73.9	—	—

TABLE IV.—SHOWING THE HIGHEST POINTS GAINED EACH YEAR SINCE 1910.

Year.	Pedigree Short-horn Cows.	Pedigree Short-horn Cows, 3 to 5 years.	Pedigree Short-horn Heifers.	Non-Pedigree Short-horn Cows.	Non-Pedigree Short-horn Heifers.	Lincolnshire Red Cows.	Lincolnshire Red Heifers.	Jersey Cows.	Guernsey Cows.	Guernsey Heifers.	Red Poll Cows.	Red Poll Heifers.	Devon Cows.	South Devon Cows.	Ayrshire Cows.	Kerry Cows.	Kerry Heifers.	Dexter Cows.	British Friesian Cows.	British Friesian Heifers.	Welsh Black Cows.	Blue Aldon.
1910	136.7	88.7	138.5	85.1	124.2	66.2	111.6	82.5	120.0	79.6	135.6	87.7	100.3	—	—	—	—	—	—	—	—	—
1911	163.3	76.7	143.0	108.8	133.5	81.1	115.4	88.8	120.3	70.9	112.7	75.7	92.9	—	—	—	—	—	—	—	—	—
1912	125.6	57.7	169.5	106.7	130.4	89.1	117.9	88.0	122.7	70.9	144.8	90.9	102.8	—	—	—	—	—	—	—	—	—
1913	127.6	83.6	158.0	102.1	114.8	81.2	123.1	93.8	120.5	81.2	115.7	130.2	93.7	—	—	—	—	—	—	—	—	—
1914	144.8	98.1	136.9	97.6	105.5	77.2	112.2	99.7	147.9	98.1	133.8	—	—	—	—	—	—	—	—	—	—	—
1915	125.8	79.1	149.5	101.7	111.2	80.2	104.5	96.7	104.0	82.1	99.2	—	—	—	—	—	—	—	—	—	—	—
1916	116.7	69.0	117.8	118.8	133.6	85.1	118.8	92.4	135.9	96.2	111.3	—	—	—	—	—	—	—	—	—	—	—
1917	136.4	87.0	129.1	96.1	115.1	100.2	120.1	130.4	73.8	119.0	92.2	127.9	—	—	—	—	—	—	—	—	—	—
1918	131.9	81.0	138.8	87.5	157.1	96.8	100.4	124.1	83.7	117.3	81.2	132.5	143.6	116.8	107.9	63.2	58.0	47.3	155.6	96.7	—	—
1919	136.7	87.0	129.1	96.1	115.1	100.2	120.1	130.4	73.8	119.0	92.2	127.9	—	—	—	—	—	—	—	—	—	—
1920	131.9	81.0	138.8	87.5	157.1	96.8	100.4	124.1	83.7	117.3	81.2	132.5	143.6	116.8	107.9	63.2	58.0	47.3	155.6	96.7	—	—
1921	131.9	81.0	138.8	87.5	157.1	96.8	100.4	124.1	83.7	117.3	81.2	132.5	143.6	116.8	107.9	63.2	58.0	47.3	155.6	96.7	—	—
1922	152.2	116.1	129.8	88.2	150.6	82.4	109.3	128.0	78.8	122.6	80.3	126.2	142.4	120.0	85.0	63.4	70.9	158.3	88.9	109.9	—	—
1923	167.1	121.9	90.0	166.1	116.5	137.6	108.0	119.9	107.7	102.7	94.6	125.3	139.2	150.3	114.8	60.3	79.0	154.7	78.4	—	—	—

TABLE V.—QUANTITY AND QUALITY OF MILK.

BREED.	Year.	No. of Competitors.	Average Weight of Milk.		Total Weight of Milk.	Average Composition of Milk.					
			Fat.			Solids not Fat.		Total Solids.			
			Morn.	Even.		Morn.	Even.	Morn.	Even.		
Shorthorn Pedigree, over 5 years	1923	17	lbs. 26-6	lbs. 23-0	lbs. 49-6	4-00	5-38	9-16	8-74	13-16	14-12
Do. do. (over 3 and under 5 years)	1923	7	26-5	21-6	48-1	3-96	4-36	8-87	8-70	12-83	13-06
Do. Heifers	1923	13	15-4	13-8	29-2	3-94	5-04	9-08	9-05	13-02	14-09
Shorthorn Non-pedigree Cow,	1923	11	25-8	21-8	47-6	4-48	5-42	8-86	8-79	13-34	14-21
Do. do. Heifers	1923	9	21-6	18-2	39-8	4-18	5-36	8-84	9-02	13-02	14-38
Lincoln Red Shorthorn Cows	1923	10	26-7	23-2	49-9	4-11	4-89	9-24	9-16	13-12	13-93
Do. do. Heifers	1923	7	21-5	18-1	39-6	3-82	5-20	9-34	9-16	13-06	14-36
Jersey Cows	1923	22	18-1	15-1	33-2	5-01	6-07	9-34	9-37	14-35	15-44
Do. Heifers, bred in Gt. Britain and Ireland	1923	12	14-3	11-7	26-0	5-51	5-01	9-38	9-55	15-09	14-56
Do. do. bred in Channel Islands	1923	4	14-8	11-7	26-5	5-19	6-03	9-41	9-53	14-60	15-56
Guernsey, 5 years and over	1923	4	17-4	13-5	30-9	4-26	5-06	9-41	9-28	13-67	14-34
Do. over 3 and under 5 years	1923	6	23-1	18-5	41-6	3-93	5-31	9-26	9-22	13-19	14-53
Do. Heifers	1923	2	20-7	17-6	38-3	3-08	4-82	9-01	9-14	12-09	13-06
Red Poll, 5 years and over	1923	6	27-2	22-5	49-7	3-82	4-84	9-03	9-02	12-85	13-86
Do. over 3 and under 5 years	1923	9	25-3	19-9	45-2	3-53	5-25	9-09	9-41	12-62	14-66
Do. Heifers	1923	6	18-6	15-5	34-1	3-94	4-52	9-17	9-13	13-11	13-65
Devon Cows	1923	5	23-3	19-8	43-1	4-04	5-14	9-44	9-27	13-48	14-41
South Devon Cows	1923	3	25-5	23-2	48-7	3-95	5-85	9-36	9-25	13-31	15-10
Ayrshire Cows	1923	6	30-5	25-1	55-6	4-28	5-12	9-20	8-83	13-48	13-95
Do. Heifers	1923	10	21-4	18-1	39-5	4-08	4-62	9-22	9-25	13-30	13-87
Kerry Cows...	1923	7	20-8	16-9	37-7	3-88	4-44	9-44	9-28	13-32	13-72
Do. Heifers	1923	4	10-7	9-3	20-0	3-67	4-13	9-58	9-78	13-25	13-91
Dexter Cows	1923	4	13-0	10-4	23-4	3-45	3-53	9-07	9-11	12-52	12-64
Do. Heifers	1923	4	9-3	7-3	16-6	4-75	4-77	9-33	9-32	14-08	14-09
*British Friesian, 5 years and over	1923	4	30-8	26-6	57-4	3-71	4-56	8-72	8-71	12-43	13-27
Do. do. over 3 and under 5 years	1923	11	31-7	27-0	58-7	3-25	4-07	8-85	8-90	12-10	12-97
Do. do. Heifers	1923	2	19-5	15-3	34-8	3-32	4-64	8-83	8-82	12-15	13-46
Blue Albions	1923	2	18-8	16-4	35-2	4-25	4-25	9-47	9-24	13-69	13-49

* Excluding cows milked three times a day.

TABLE VI.—NUMBER OF ANIMALS YIELDING MILK DEFICIENT IN FAT AND OTHER SOLIDS.

Description.	Less than 3 per cent. of Fat.										Less than 8.5 per cent. of other Solids.									
	1912	1913	1914	1915	1919	1920	1921	1922	1923	1912	1913	1914	1915	1919	1920	1921	1922	1923		
Cows.																				
ry Shorthorn—Pedigree	
y Shorthorn—Non-Pedigree	
ohn Red Shorthorn	
oll	
ish Friesian	
on	
h Devon	
shire	
ey	
nsey	
y	
er	
h Black	
h Albion	
ws (OVER 3 AND UNDER 5 YEARS)	
y Shorthorn—Pedigree	
oll	
sh Friesian	
nsey	
HELFERS.																				
y Shorthorn—Pedigree	
y Shorthorn—Non-Pedigree	
ohn Red Shorthorn	
oll	
sh Friesian	
nsey	
y	
y (bred in Gt. Britain or Ireland)	
y (bred in Channel Islands)	
hire	
er	
Total	
Number of Animals Tested	

*Excluding cows milked three times a day.

MILKING TRIALS, 1923.

CLASS 1.—DAIRY SHORTHORN COWS (ENTERED IN OR ELIGIBLE FOR COATES' HERD BOOK, OR ITS PEDIGREE SENT FOR SUCH ENTRY PREVIOUS TO THE SHOW. BORN ON OR PREVIOUS TO 1ST AUGUST, 1918).

Number ...	Name ...	...	...	...	...	2	3	4	6
						Lady Barrington 2nd. Dec. 2, 1917. Aug. 24. 59 1,171	Sweet Clara 2nd. Oct. 25, 1915. Sept. 2. 50 1,274	Thurham Ringlet 7th. Oct. 3, 1917. Dec. 6. 319 1,454	Bridesmaid 8th. Sept. 26, 1915. May 1. 174 1,358
Born	Morn Even	Morn Even	Morn Even	Morn Even
Number of Calves	29-7 23-3	26-3 22-4	13-9 10-6	14-3 13-3
Last Calved	30-3 22-9	26-1 20-5	14-2 11-4	18-6 14-4
Days since Calving	60-0 46-2	52-4 42-9	28-1 22-0	32-9 27-7
Live weight, in lbs.	30-0 23-1	26-2 21-5	14-0 11-0	16-4 13-9
Weight of Milk, 1st day	3-98 4-04	4-98 5-43	4-91 4-45	3-93 3-73
Weight of Milk, 2nd day	9-64 9-40	9-46 8-87	8-15 8-15	9-07 8-83
Percentage of the Milk.	{ Fat ... Solids other than Fat ... Total Solids ...	...	...	...	...	13-62 13-44	14-44 14-30	13-06 12-60	13-00 12-56
						1-19 9-34	1-31 1-17	6-88 4-49	6-45 5-20
Actual weight of Fat, in lbs.	23-8 18-7	26-2 23-4	13-76 9-8	12-9 10-4
Calculation of Points multiply by 20	2-89 2-17	2-47 1-90	1-14 9-0	1-48 1-21
Actual weight of Solids other than Fat, in lbs.	9-56 8-7	9-88 7-6	4-56 3-6	5-92 4-8
Calculation of Points multiply by 4	1-9	1-0	12-0	12-0
Points { For time since Calving ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4) ...	{	53-1	47-7	25-0	20-3
						42-5	49-6	23-6	23-3
						18-3	17-5	8-2	10-7
						115-8	115-8	68-8	76-3
Total	—	—	20-0	—
Deductions	115-8	115-8	48-8	76-3
Points gained	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.
Remarks and Awards	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 1.—DAIRY SHORTHORN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1918).—Continued.

Number ...	...	...	...	7	9	12	14
Name ...	...	...	...	Waterbrook Princess 2nd	Longhill's Charming Duchess 2nd.	Bianca Blanche 11th.	Nelly Lee A 2.
Born ...	...	...	...	Aug. 5, 1916.	July 4, 1918.	May 13, 1917.	Aug. 14, 1914.
Number of Calves ...	...	...	...	June 19.	Sept. 8.	Aug. 15.	Aug. 24.
Last Calved ...	...	...	...	125	44	68	59
Days since Calving ...	...	...	...	1,581	1,248	1,331	1,532
Lave weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	27.1 21.6	22.4 27.4	18.6 15.0	31.5 25.6
Weight of Milk, 2nd day ...	...	...	...	28.6 21.4	27.1 24.2	17.2 15.8	26.9 26.4
Total ...	...	...	...	55.7 43.0	49.5 51.6	35.8 30.8	58.4 52.0
Average ...	...	...	...	27.8 21.5	24.7 25.8	17.9 15.4	29.2 26.0
Percentage { Fat ...	...	...	...	3.61 4.36	2.80 4.72	3.57 5.14	4.38 5.71
Composition of { Solids other than Fat	...	...	...	8.73 8.68	9.38 8.88	8.93 8.60	8.56 8.51
the Milk. { Total Solids	...	...	...	12.34 13.04	12.18 13.60	12.50 13.74	12.94 14.22
Actual weight of Fat, in lbs. ...	...	...	...	1.03 .945	.694 1.22	.640 .795	1.28 1.48
Calculation of Points multiply by 20...	...	...	...	20.6 18.9	12.88 24.4	12.80 15.9	25.6 29.6
Actual weight of Solids other than Fat, in lbs.	...	...	...	2.45 1.83	2.32 2.30	1.60 1.32	2.50 2.22
Calculation of Points multiply by 4 ...	...	...	...	9.80 7.3	9.28 9.2	6.40 5.3	10.0 8.9
Points {	For time since Calving	...	...	8.5	0.4	2.8	1.9
	For weight of Milk (lbs.)	...	...	49.3	50.5	33.3	55.2
	For weight of Fat (lbs. × 20)	...	...	39.5	38.3	28.7	55.2
	For weight of Solids other than Fat (lbs. × 4) ...	...	...	17.1	18.5	11.7	18.9
	Total ...	...	...	114.4	107.7	76.5	131.2
Deductions ...	...	...	...	—	10.0	—	—
Points gained...	...	...	...	114.4	97.7	76.5	131.2
Remarks and Awards ...	...	...	...	Highly Commended.			Highly Commended.

CLASS 1.—DAIRY SHORTHORN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1918)—Continued.

Number ...	15	20	21	22
Name ...	Hadcock Charm- ing Lass 9th.	Rosette Prim 3rd.	Irright Darling.	Clara's Beauty.
Born ...	June 30, 1914.	Mar. 13, 1918.	Dec. 22, 1916.	Mar. 4, 1918.
Number of Calves ...	July 17.	Sept. 28.	Oct. 5.	Sept. 30.
Last Calved ...	97	24	17	22
Days since Calving ...	1,636	1,520	1,348	1,278
Live weight, in lbs. ...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	29.8 24.5	21.7 20.6	39.3 33.7	35.3 39.4
Weight of Milk, 2nd day ...	26.8 23.1	19.1 19.8	36.2 30.4	38.1 34.3
Average ...	56.6 47.6	40.8 40.4	75.5 64.1	73.4 73.7
Percentage of Fat ...	28.3 23.8	20.4 20.2	37.7 32.1	36.7 36.9
Composition of Solids of the Milk. { Total Surer than Fat	3.65 6.73	3.90 5.03	3.24 5.08	2.68 7.70
Actual weight of Fat, in lbs. {	9.97 8.99	8.86 8.85	8.86 8.82	9.52 8.56
Calculation of Points multiplied by 20. ...	13.62 15.72	12.76 13.88	12.10 13.90	12.20 16.26
Actual weight of Solids multiplied by 20. ...	1.03 1.62	.797 1.02	1.22 1.63	.99 2.85
Calculation of Points multiplied by 4 ...	2.82 2.14	15.94 20.4	24.4 32.6	19.8 57.0
For time since calving ...	11.28 8.6	7.24 7.1	3.35 2.83	3.50 3.17
For weight of milk (lbs.) ...	5.7	—	13.40 11.3	14.00 12.7
For weight of fat (lbs. × 20) ...	52.1	40.6	—	—
Solids other than Fat ...	53.0	36.3	69.8	76.8
Total ...	19.19	14.3	25.5	26.7
Deductions ...	130.7	91.2	152.3	177.1
Points gained ...	—	—	—	10.0
Remarks and Awards	130.7	91.2	152.3	167.1
...	Highly Commended.	—	3rd Prize, Shirley Cup.	1st Prize, Gold Medal, Desborough Cup, Barham Cup.

CLASS 1.—DAIRY SHORTHORN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1918).—Continued.

Number ... Name ...	23 Foggothorpe Primrose, Sept. 5, 1915.	25 Merry Maid 5th. May. 3, 1917.	27 Wild Nottingham 2nd. Mar. 30, 1918.	28 Betty 24th. Sept. 21, 1917.
Born ...	...	...	...	...
Number of Calves ...	...	...	...	...
Last Calved ...	...	...	...	...
Days since Calving ...	...	...	...	...
Live weight, in lbs.	...	...	...	...
Weight of Milk, 1st day	Morn 34.9 Even 30.4	Morn 30.1 Even 28.2	Morn 22.7 Even 20.7	Morn 30.6 Even 24.3
Weight of Milk, 2nd day	35.2	34.0	22.8	30.9
Total	70.1	64.1	45.5	61.5
Average ...	35.0	32.0	22.7	30.7
Percentage of Fat ...	4.00	3.87	4.20	5.73
Composition of Milk. { Solids other than Fat	8.86	8.81	9.40	9.43
{ Total Solids	12.86	12.68	13.60	15.16
Actual weight of Fat, in lbs.	1.40	1.24	.955	1.76
Calculation of Points multiply by 20...	28.0	24.8	19.10	35.2
Actual weight of Solids other than Fat, in lbs.	3.10	2.82	2.13	2.90
Calculation of Points multiply by 4 ...	12.4	11.28	8.52	11.6
Points { For time since Calving	11.0	0.6	—	—
{ For weight of Milk (lbs.)	65.3	60.0	43.4	55.2
{ For weight of Fat (lbs. × 20)	58.8	52.8	41.7	55.8
{ For weight of Solids other than Fat	23.0	20.9	15.8	20.3
(lbs. × 4) ...	158.1	135.3	100.9	131.3
Total ...	—	—	—	—
Deductions	—	—	—	—
Points gained...	158.1	135.3	100.9	131.3
Remarks and Awards ...	2nd Prize, Reserve for Desborough Cup.	Reserve and Highly Commended. Reserve for Shorthorn Society's Prize.	Highly Commended.	Highly Commended.

CLASS 1.—DAIRY SHORTHORN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1918)—Continued.

Number ...	...	...	...	...	...	29
Name ...	...	...	...	...	...	Kirklevington 54th.
Born ...	...	...	...	...	...	Sept. 18, 1917.
Number of Calves	...	...	...	...	...	—
Last Calved	...	...	...	...	...	Oct. 1.
Days since Calving	...	...	...	...	...	21
Live weight, in lbs.	...	...	...	...	...	1,318
Weight of Milk, 1st day	...	...	...	...	...	Morn
Weight of Milk, 2nd day	...	...	...	...	...	Even
Total	...	...	...	...	...	22-9 19-8
Average	...	...	...	...	...	21-6 14-8
Percentage { Fat ...	...	...	...	...	...	44-5 34-6
Composition of { Solids other than Fat	...	...	...	...	...	22-2 17-3
the Milk. { Total Solids	...	...	...	...	...	5-49 9-90
Actual weight of Fat, in lbs.	...	...	...	...	...	8-71 7-92
Calculation of Points multiply by 20...	...	...	...	...	...	14-20 17-82
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	1-22 1-72
Calculation of Points multiply by 4 ...	...	...	...	...	...	24-4 34-4
{ For time since Calving	...	...	...	...	...	1-93 1-37
{ For weight of Milk (lbs.)	...	...	...	...	...	7-72 5-5
{ For weight of Fat (lbs. × 20)	...	...	...	...	...	—
{ For weight of Solids other than Fat	...	...	...	...	...	39-5
(lbs. × 4) ...	...	...	...	...	...	58-8
Total ...	...	...	...	...	...	13-2
Deductions	...	...	...	...	...	111-5
Points gained...	...	...	...	...	...	10-0
Remarks and Awards ...	...	...	...	...	...	101-5
	...	...	...	...	...	Highly Commended.

CLASS 2.—DAIRY SHORTHORN COWS (ENTERED IN OR ELIGIBLE FOR COATES' HERD BOOK, OR ITS PEDIGREE SENT FOR SUCH ENTRY PREVIOUS TO THE SHOW. BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920).

Number	...	...	...	...	31	32	39	45
Name	...	...	...	...	Lezow Scaphina 9th. Sept. 20, 1918. Sept. 6. 46 1,406	Queen Marion. Oct. 3, 1919. Oct. 2. 20 1,340	Highworth Felicity 3rd. April 7, 1919. Aug. 30. 53 1,318	Barrington Victorine. Nov. 19, 1918. Oct. 6. 16 1,158
Born	...	...	...	...	Morn Even 22-7 19-9 21-7 21-4	Morn Even 24-9 23-9 26-3 22-1	Morn Even 27-8 23-3 28-8 21-7	Morn Even 22-7 19-7 23-8 21-7
Last Calved	...	...	...	...	44-4 41-3	51-2 46-0	56-6 45-0	46-5 41-4
Days since Calving	...	...	...	...	22-2 20-7	25-6 23-0	28-3 22-5	23-2 20-7
Lave weight, in lbs.	...	...	...	...	3-85 4-50 8-61 8-94	3-01 4-67 9-07 8-69	4-42 4-70 8-78 8-70	2-37 4-42 8-99 8-92
Weight of Milk, 1st day	...	...	...	...	12-46 13-44	12-08 13-36	13-20 13-40	11-36 13-34
Weight of Milk, 2nd day	...	...	...	...	8-60 -93	7-7 1-07	1-25 1-06	5-54 -916
Total	...	...	...	...	17-2 18-6	15-4 21-4	25-0 21-2	11-08 18-3
Average	...	...	...	...	1-61 1-86	2-32 2-00	2-49 1-96	2-08 1-85
Percentage of Fat	...	...	...	...	7-64 7-4	9-28 8-00	9-96 7-84	8-32 7-40
Composition of Solids other than Fat	...	...	...	...	42-9 35-8	48-6 36-8	50-8 46-2	43-9 39-4
Actual weight of Fat, in lbs.	...	...	...	...	15-0 93-7	17-3 102-7	17-8 114-8	15-7 89-0
Calculation of Points multiply by 20...	...	...	...	...	93-7	102-7	114-8	10-0
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	...	...	...
Calculation of Points multiply by 4 ...	...	...	...	...	...	...	...	...
Points { For time since Calving	...	...	...	...	...	...	...	...
For weight of Milk (lbs.)	...	...	...	...	...	...	...	...
For weight of Fat (lbs. x 20)	...	...	...	...	...	...	...	...
For weight of Solids other than Fat (lbs. x 4) ...	...	...	...	...	...	...	...	...
Total	...	...	...	...	...	...	...	...
Deductions	...	...	...	...	...	...	...	...
Points gained...	...	...	...	...	...	...	...	...
Remarks and Awards	...	...	...	...	Highly Commended.	Reserve and Highly Commended.	2nd Prize.	...

CLASS 2.—DAIRY SHORTHORN COWS (BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920).—Continued.

Number ...	...	...	46	51	53
Name ...	...	...	Waterbrook Hobbs 2nd.	Longhills Melody.	Primula 173rd.
Born ...	...	...	Mar. 20, 1919.	Sept. 1, 1918.	Nov. 6, 1919.
Number of Calves ...	...	...	Sept. 2.	Sept. 26.	Sept. 30.
Last Calved ...	...	...	50	26	22
Days since Calving ...	...	...	1,339	1,396	1,264
Live weight, in lbs. ...	...	...	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	27-1 4-8	34-4 31-7	24-0 18-8
Weight of Milk, 2nd day ...	...	...	35-0 20-4	33-1 29-6	19-7 21-9
Total ...	...	...	62-1 25-2	67-5 61-3	43-7 40-7
Average ...	...	...	31-0 12-6	33-7 30-7	21-8 20-4
Percentage { Fat ...	...	...	4-41 3-53	3-83 3-20	5-87 6-14
Composition of { Solids other than Fat	...	...	8-59 8-19	8-87 8-40	9-41 9-26
the Milk. { Total Solids	...	...	13-00 11-72	12-70 11-60	15-28 15-40
Actual weight of Fat, in lbs. ...	...	...	1-37 -445	1-28 -985	1-28 1-25
Calculation of Points multiply by 20 ...	...	...	27-4 8-90	25-6 19-70	25-6 25-0
Actual weight of Solids other than Fat, in lbs.	...	...	2-66 1-04	2-97 2-58	2-05 1-89
Calculation of Points multiply by 4 ...	...	...	10-6 4-2	11-88 10-32	8-2 7-56
Points { For time since Calving	...	...	1-0	—	—
{ For weight of Milk (lbs.)	...	...	43-6	64-4	42-2
{ For weight of Fat (lbs. × 20)	...	...	36-3	45-3	50-6
{ For weight of Solids other than Fat	...	...	14-8	22-2	15-8
(lbs. × 4) ...	...	...	95-7	131-9	108-6
Total ...	...	...	10-0	10-0	—
Deductions ...	...	...	85-7	121-9	108-6
Points gained ...	...	...	Highly Commended.	1st Prize, Shorthorn Society's Prize.	3rd Prize.
Remarks and Awards ...	...	...	

CLASS 3.—DAIRY SHORTHORN HEIFERS (ENTERED IN OR ELIGIBLE FOR COATES' HERD BOOK.
BORN ON OR AFTER 1ST AUGUST, 1920).

Number ...	57	63	64	66
Name ...	Hinchinbrooke Harewell.	Thornby Queale.	Thornby Dafrymald.	Sorbrook Timbrel.
Born ...	Jan. 7, 1921.	Nov. 30, 1920.	Oct. 2, 1920.	April 25, 1921.
Number of Calves	—	—	—	—
Last Calved	June 8.	Aug. 29	Sept. 29.	Sept. 8.
Days since Calving	136	54	23	44
Live weight, in lbs.	998	1,088	1,126	1,157
Weight of Milk, 1st day	Morn	Morn	Morn	Morn
Weight of Milk, 2nd day	Even	Even	Even	Even
Total	10-9	15-3	13-9	13-7
Average ...	12-5	14-9	16-2	14-5
Percentage	23-4	30-2	30-1	28-2
Composition of	11-7	15-1	15-0	14-1
the Milk.	3-63	4-77	3-68	4-24
Total Solids	9-49	8-89	9-16	9-00
Actual weight of Fat, in lbs.	13-12	13-66	13-54	13-24
Calculation of Points multiply by 20...	-425	-72	-55	-600
Actual weight of Solids other than Fat, in lbs.	8-5	14-4	11-0	12-00
Calculation of Points multiply by 4 ...	1-11	1-34	1-37	1-27
Points	4-44	5-36	5-48	5-08
For time since Calving	9-6	1-4	—	0-4
For weight of Milk (lbs.)	22-4	28-4	29-3	25-5
For weight of Fat (lbs. × 20)	21-3	29-0	24-6	24-5
For weight of Solids other than Fat	8-3	10-0	10-5	9-2
(lbs. × 4) ...	61-6	68-8	64-4	59-6
Total	—	—	—	—
Deductions	61-6	68-8	64-4	59-6
Points gained...	—	—	—	—
Remarks and Awards ...	—	Highly Commended.	—	—

CLASS 3.—DAIRY SHORTHORN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1920).—Continued.

Number ...	67	68	69	73
Name ...	Grondon Wild Thyme	Thrup Waterloo Rachel	Thrup Dafrymaid	Loughlin's Deepberry 2nd
Born ...	Nov. 12, 1920,	Sept. 27, 1920.	Nov. 14, 1920.	Sept. 4, 1920.
Number of Calves ...	—	—	—	—
Last Calved ...	Oct. 8.	Sept. 17.	Sept. 19.	Sept. 7.
Days since Calving ...	14	35	33	45
Live weight, in lbs. ...	1,164	1,183	1,027	1,318
Weight of Milk, 1st day ...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day ...	14.0 11.6	11.4 12.9	19.8 16.2	21.5 19.6
Total ...	11.4 11.3	13.4 14.5	20.5 17.4	25.4 20.7
Average ...	25.4 22.9	24.8 27.4	40.3 33.6	46.9 40.3
Percentage { Fat ...	12.7 11.5	12.4 13.7	20.1 16.8	23.4 20.2
Composition of Solids other than Fat	4.71 5.62	4.85 5.41	3.60 5.02	3.12 3.94
the Milk. { Total Solids ...	9.83 9.66	8.61 8.79	8.88 8.94	8.76 8.90
Actual weight of Fat, in lbs. ...	14.54 15.28	13.46 14.20	12.48 13.96	11.88 12.84
Calculation of Points multiply by 20...	595 .65	.003 .74	.72 .845	.726 .80
Actual weight of Solids other than Fat, in lbs.	11.90 13.0	12.06 14.8	14.4 16.9	14.52 16.0
Calculation of Points multiply by 4 ...	1.25 1.11	1.07 1.21	1.80 1.50	2.05 1.81
Points { For time since Calving ...	5.00 4.44	4.28 4.84	7.2 6.0	8.2 7.2
{ For weight of Milk (lbs.) ...	—	—	—	—
{ For weight of Fat (lbs. × 20) ...	24.2	26.1	36.9	0.5
{ For weight of Solids other than Fat	24.9	26.9	31.3	43.6
(lbs. × 4) ...	9.4	9.1	13.2	30.5
Total ...	58.5	62.1	81.4	15.4
Deductions ...	—	—	—	90.0
Points gained...	58.5	62.1	81.4	90.0
Remarks and Awards ...	—	—	2nd Prize, Shorthorn Society's Prize.	1st Prize, Shorthorn Society's Prize.

CLASS 3.—DAIRY SHORTHORN HEIFERS. (BORN ON OR AFTER 1ST AUGUST, 1920).—Continued.

Number ... Name ...	...	...	...	...	76 Enfield Carnation 4th. Jan. 5, 1921.	78 Chaffield Rose 4th. Oct. 4, 1920.	80 Cherry 37th. Jan. 15, 1921.	83 Bright Rose. May 22, 1921.
Born ...	...	...	...	...	Oct. 1. 21	Sept. 25. 27	Aug. 6. 77	Oct. 1. 21
Number of Calves ...	...	...	...	...	1,082	1,298	940	958
Last Calved ...	...	...	...	...	...	...	...	...
Days since Calving ...	...	...	...	...	...	...	...	...
Live weight, in lbs. ...	...	...	...	...	...	...	...	...
Weight of Milk, 1st day ...	...	...	...	...	Morn	Morn	Morn	Morn
Weight of Milk, 2nd day ...	...	...	...	...	Even	Even	Even	Even
Total ...	...	...	...	...	14.4	14.6	18.4	11.5
Average ...	...	...	...	...	12.9	13.4	16.6	9.2
Percentage ...	...	...	...	...	15.2	14.8	18.5	11.8
Composition ...	...	...	...	...	29.6	27.4	36.9	23.3
the Milk. ...	...	...	...	...	14.8	14.7	18.4	11.6
Actual weight of Fat, in lbs. ...	...	...	...	...	6.06	3.91	3.00	4.04
Calculation of Points multiply by 20... Actual weight of Solids other than Fat, in lbs.	...	...	...	...	8.55	9.07	9.32	9.28
Calculation of Points multiply by 4 ...	...	...	...	...	13.10	12.98	12.32	13.32
Points ...	...	...	...	...	67.5	53.5	55	47
For time since Calving ...	...	...	...	...	13.50	10.4	11.0	9.4
For weight of Milk (lbs.) ...	...	...	...	...	1.27	1.24	1.72	1.08
For weight of Fat (lbs. × 20) ...	...	...	...	...	5.1	4.96	6.88	4.3
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	27.9	28.4	34.1	21.0
Total ...	...	...	...	...	29.3	21.1	26.0	18.4
Deductions ...	...	...	...	...	10.1	10.4	12.5	7.8
Points gained... Remarks and Awards ...	...	...	...	...	67.3	59.9	76.3	47.2
...	...	...	...	...	67.3	59.9	76.3	47.2
...	...	...	...	...	Highly Commended.	3rd Prize. Res. for Shorthorn Society's Prize.	...	...

CLASS 4.—DAIRY SHORTHORN COWS (NOT ELIGIBLE FOR CLASSES 1 OR 2).—Continued.

Number ...	...	...	...	109 Marion.	110 Pretty Maid.	117 Ruth.
Name ...	...	...	...	1917.	1918.	—
Born ...	...	...	...	June 30.	Sept. 12.	Oct. 4.
Number of Calves	...	...	...	114	40	18
Last Calved ...	...	...	...	1,292	1,276	1,309.
Days since Calving	...	...	...	Morn	Even	Morn
Live weight, in lbs.	...	...	...	Even	Even	Even
Weight of Milk, 1st day	...	...	...	28-6	29-0	24-4
Weight of Milk, 2nd day	...	...	...	33-4	26-2	17-2
Total	...	...	...	62-0	55-2	18-6
Average ...	...	...	...	31-0	27-6	15-0
Percentage { Fat ...	...	...	...	3-67	5-10	43-0
Composition of { Solids other than Fat	...	...	...	8-89	4-94	21-5
the Milk. { Total Solids	...	...	...	12-56	8-86	16-1
Actual weight of Fat, in lbs. ...	...	...	...	1-14	1-38	5-49
Calculation of Points multiply by 20...	...	...	...	22-8	13-80	5-29
Actual weight of Solids other than Fat, in lbs.	...	...	...	2-77	2-47	8-99
Calculation of Points multiply by 4 ...	...	...	...	11-1	9-9	8-95
Points { For time since Calving	...	...	...	7-4	—	1-18
	...	...	...	58-6	60-8	85
	...	...	...	51-0	50-6	—
	...	...	...	20-6	21-6	37-6
Total ...	...	...	...	137-6	133-0	40-6
Deductions ...	...	...	...	—	—	13-6
Points gained...	...	...	...	137-6	133-0	91-8
Remarks and Awards ...	...	...	...	2nd Prize.	3rd Prize.	91-8
	...	...	...	Equal Reserve for Shorthorn Association's Prize.		

CLASS 5.—DAIRY SHORTHORN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1920. NOT ELIGIBLE FOR CLASS 3).

Number ...	...	...	...	118 Beauty 4th.	119 Sally.	122 Burbage Cherry 5th.	123 Pinfold.
Name ...	...	...	...	Aug. 29, 1920	1920.	Nov. 3, 1920.	Aug. 1920.
Born ...	...	...	...	Sept. 9.	Oct. 7.	Sept. 22.	Sept. 2.
Number of Calves ...	...	...	...	43	15	30	50
Days since Calving ...	...	...	...	1,105	1,252	1,218	1,162
Live weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	23-5 18-5	31-2 26-0	23-6 20-4	16-8 14-8
Weight of Milk, 2nd day ...	...	...	...	21-6 19-7	29-2 22-7	22-6 18-3	16-5 14-7
Total ...	...	...	...	45-1 38-2	60-4 48-7	46-2 38-7	33-3 29-5
Average ...	...	...	...	22-5 19-1	30-2 24-4	23-1 19-4	16-6 14-8
Percentage { Fat ...	...	...	...	4-21 4-60	5-21 6-51	4-48 5-79	3-23 4-46
Composition of { Solids other than Fat	...	...	...	8-73 8-98	8-45 8-27	9-14 9-37	8-63 8-74
the Milk. { Total Solids	...	...	...	12-94 13-58	13-66 14-78	13-62 15-16	11-86 13-20
Actual weight of Fat, in lbs. ...	...	...	...	95 .875	1-58 1-60	1-04 1-12	54 .66
Calculation of Points multiply by 20 ...	...	...	...	19-00 17-5	31-6 32-0	20-8 22-4	10-8 13-2
Actual weight of Solids other than Fat, in lbs.	...	...	...	1-96 1-72	2-56 2-02	2-11 1-82	1-43 1-30
Calculation of Points multiply by 4 ...	...	...	...	7-8 6-9	10-24 8-1	8-4 7-3	5-7 5-2
Points { For time since Calving ...	...	...	...	0-3	—	—	1-0
{ For weight of Milk (lbs.) ...	...	...	...	41-6	54-6	42-5	31-4
{ For weight of Fat (lbs. × 20) ...	...	...	...	36-5	63-6	43-2	24-0
{ For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	14-7	18-3	15-7	10-9
Total ...	...	...	...	93-1	136-5	101-4	67-3
Deductions ...	...	...	...	—	20-0	—	—
Points gained ...	...	...	...	93-1	116-5	101-4	67-3
Remarks and Awards ...	...	...	...	Reserve and Highly Commended.	1st Prize.	2nd Prize.	

CLASS 5.—DAIRY SHORTHORN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1920. NOT ELIGIBLE FOR CLASS 3).—Continued.

Number	...	...	...	...	125	127	128	129
Name	...	...	...	...	Cress 2nd.	Violet 14th.	Enfield Queen 4th.	Brooklands Buttercup 2nd.
Born	...	...	...	...	Nov. 6, 1920.	Sept. 11, 1920.	Dec. 3, 1920.	Dec. 21, 1920.
Number of Calves	...	...	...	...	Sept. 27.	Oct. 7.	Sept. 29.	Sept. 17th.
Last Calved	...	...	...	...	25	15	23	35
Days since Calving	...	...	...	...	1,253	1,330	1,249	1,082
Live weight, in lbs.	...	...	...	...	Morn	Morn	Morn	Morn
	...	...	...	...	Even	Even	Even	Even
Weight of Milk, 1st day	...	...	...	...	18-2	17-4	19-9	22-1
Weight of Milk, 2nd day	...	...	...	...	20-3	16-6	22-8	22-6
Total	...	...	...	...	38-5	34-0	42-7	44-7
Average	...	...	...	...	19-2	17-0	21-3	22-3
Percentage	...	...	...	...	5-24	4-50	2-34	3-42
Composition of	...	...	...	...	9-04	9-24	8-08	8-74
the Milk.	...	...	...	...	14-28	14-72	11-02	12-16
Actual weight of Fat, in lbs.	...	...	...	...	1-01	-92	-50	-765
Calculation of Points multiply by 20...	...	...	...	...	20-2	18-4	10-00	15-30
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-74	1-04	1-85	1-95
Calculation of Points multiply by 4	...	...	...	...	7-0	6-6	7-40	7-80
Points	...	...	...	...	36-6	31-9	38-1	40-7
	...	...	...	...	38-6	29-9	33-0	33-9
	...	...	...	...	13-6	11-9	13-4	14-2
	...	...	...	...	88-8	73-7	84-5	88-8
	...	...	...	...	88-8	73-7	10-0	—
	...	...	...	...	88-8	73-7	74-5	88-8
Remarks and Awards	...	...	...	...	Highly Commended.	Highly Commended	Highly Commended.	Highly Commended.

CLASS 5.—DAIRY SHORTHORN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1920. NOT ELIGIBLE FOR CLASS 3)—Continued.

Number ...	...	...	...	...	...	130
Name ...	...	...	...	...	...	Lady of Enfield.
Born ...	...	...	...	...	...	Jan. 7, 1921.
Number of Calves	...	...	...	...	...	Sept. 27.
Last Calved	...	...	...	...	...	25
Days since Calving	...	...	...	...	...	1,208
Live weight, in lbs.	...	...	...	...	...	Morn Even
Weight of Milk, 1st day	...	...	...	...	...	21-9 17-4
Weight of Milk, 2nd day	...	...	...	...	...	22-2 19-6
Total	...	...	...	...	...	44-1 37-0
Average	...	...	...	...	...	22-0 18-5
Percentage	...	...	...	...	...	4-47 5-26
Composition of	...	...	...	...	...	9-11 9-66
the Milk.	...	...	...	...	...	13-58 14-92
Actual weight of Fat, in lbs.	...	...	...	...	...	-97 -98
Calculation of Points multiply by 20...	...	...	...	...	...	19-4 19-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	2-00 1-78
Calculation of Points multiply by 4 ...	...	...	...	...	...	8-00 7-1
Points	...	...	...	...	...	—
For time since Calving	...	...	...	...	...	40-5
For weight of Milk (lbs.)	...	...	...	...	...	39-0
For weight of Fat (lbs. \times 20)	...	...	...	...	...	15-1
For weight of Solids other than Fat	...	...	...	...	...	94-6
(lbs. \times 4) ...	...	...	...	...	...	—
Total	...	...	...	...	...	94-6
Deductions	...	...	...	...	...	—
Points gained...	...	...	...	...	...	94-6
Remarks and Awards ...	...	...	...	...	...	3rd Prize.

CLASS 6.—LINCOLN RED SHORTHORN COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK OF THE LINCOLNSHIRE RED SHORTHORN ASSOCIATION).

Number ...	135	136	137	138
Name ...	Sothorn Address 2nd.	Sothorn Mystic.	Bendish Freda 2nd.	Bendish Hope 3rd.
Born ...	April 9, 1916.	May 26, 1918.	Oct. 15, 1915.	Oct. 10, 1917.
Number of Calves ...	Aug. 25.	May 27.	Sept. 30.	Oct. 8.
Last Calved ...	58	148	22	14
Days since Calving ...	1,551	1,448	1,498	1,309
Live weight, in lbs.	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day	29.5 25.0	21.5 17.8	23.8 22.3	27.3 19.6
Weight of Milk, 2nd day	28.5 26.4	20.8 18.4	26.2 21.5	26.9 26.2
Total	58.0 51.4	42.3 36.2	50.0 43.8	54.2 45.8
Average ...	29.0 25.7	21.1 18.1	25.0 21.9	27.1 22.9
Percentage	2.42 4.07	4.04 5.62	4.80 5.49	4.45 5.75
Composition of	8.50 8.83	8.80 8.86	9.18 9.31	8.83 8.69
the Milk. {	10.92 13.50	13.44 14.48	13.98 14.80	13.28 14.44
Total Solids	.70 1.20	.97 1.02	1.20 1.20	1.20 1.32
Actual weight of Fat, in lbs. ...	14.0 24.0	19.4 20.4	24.0 24.0	24.0 26.4
Calculation of Points multiply by 20...	2.46 2.27	1.85 1.61	2.29 2.05	2.40 1.99
Actual weight of Solids other than Fat, in lbs.	9.84 9.08	7.40 6.44	9.16 8.2	9.60 7.96
Calculation of Points multiply by 4 ...	1.8	10.8	—	—
Points {	For time since Calving	39.2	46.9	50.0
	For weight of Milk (lbs.)	39.8	48.0	50.4
	For weight of Fat (lbs. × 20)	—	—	—
	For weight of Solids other than Fat	13.8	17.4	17.6
	(lbs. × 4) ...	103.6	112.3	118.0
Total ...	113.4	—	—	—
Deductions ...	10.0	—	—	—
Points gained...	103.4	103.6	112.3	118.0
Remarks and Awards ...	Highly Commended.	Highly Commended.	Highly Commended.	3rd Prize.

CLASS 6.—LINCOLN RED SHORTHORN COWS—Continued.

Number ... Name ...	...	...	...	...	...	142 Flamville Dairy, Md. 143rd.	144 Retford Milker.	145 Burton Ruby 23rd.	146 Burton Amy 7th.
Born ...	...	...	...	...	...	Dec. 20, 1918.	Dec. 20, 1918.	April 29, 1916.	Mar. 14, 1916.
Number of Calves ...	...	...	...	...	...	Sept. 29.	Sept. 26.	Oct. 3.	June 3.
Last Calved ...	...	...	...	...	...	23	26	19	141
Days since Calving ...	...	...	...	...	...	1,254	1,456	1,583	1,386
Live weight, in lbs. ...	...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	...	...	25-6 23-1	23-9 20-0	28-4 21-5	31-2 25-3
Weight of Milk, 2nd day ...	...	...	...	...	...	24-9 22-9	24-3 23-9	27-2 21-9	31-3 26-3
Total ...	...	...	...	...	...	50-5 46-0	48-2 43-9	55-6 43-4	62-5 51-6
Average ...	...	...	...	...	...	25-2 23-0	24-1 22-0	27-8 21-7	31-2 25-8
Percentage ...	...	...	...	...	...	4-02 4-86	3-80 3-93	3-86 3-60	4-05 4-72
Composition of ...	...	...	...	...	...	8-86 9-06	9-18 9-53	8-64 8-66	9-23 9-18
the Milk. ...	...	...	...	...	...	12-88 13-92	12-98 13-46	12-50 12-26	13-28 13-90
Actual weight of Fat, in lbs. ...	...	...	...	...	...	1-02 1-12	-920 -87	1-08 -78	1-26 1-22
Calculation of Points multiply by 20 ...	...	...	...	...	...	20-4 22-4	18-40 17-4	21-6 15-6	25-2 24-4
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	...	2-24 2-08	2-22 2-10	2-41 1-88	2-88 2-36
Calculation of Points multiply by 4 ...	...	...	...	...	...	8-96 8-32	8-88 8-4	9-64 7-52	11-5 9-44
Points { For time since Calving ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	48-2	46-1	49-5	10-1
	...	...	...	...	...	42-8	35-8	37-2	57-0
	...	...	...	...	...	17-3	17-3	17-2	49-6
	...	...	...	...	...	108-3	99-2	103-9	20-9
Total ...	...	...	...	...	...	—	—	—	137-6
Deductions ...	...	...	...	...	...	108-3	99-2	103-9	—
Points gained ...	...	...	...	...	...	—	—	—	137-6
Remarks and Awards ...	...	...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	1st Prize.

Class 6—LINCOLN RED SHORTHORN COWS—Continued.

Number ...	...	...	...	...	...	149
Name ...	...	...	...	...	...	Barton Ruby Spot 15th.
Born ...	...	...	...	...	...	Sept. 16, 1918.
Number of Calves ...	...	...	...	...	...	—
Last Calved ...	...	...	...	...	...	Sept. 6.
Days since Calving ...	...	...	...	...	...	46
Live weight, in lbs. ...	...	...	...	...	...	1,477
Weight of Milk, 1st day	...	...	...	...	Morn	Even
Weight of Milk, 2nd day	...	...	...	...	33.2	30.5
Total	...	...	...	...	28.0	24.4
Average	...	...	...	...	61.2	54.9
Percentage { Fat ...	...	...	...	...	30.6	27.5
Composition of { Solids other than Fat	...	...	...	...	4.09	5.80
the Milk. { Total Solids	...	...	...	...	8.93	8.78
Actual weight of Fat, in lbs. ...	...	...	...	...	13.02	14.58
Calculation of Points multiply by 20...	...	...	...	...	1.25	1.60
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	25.0	32.0
Calculation of Points multiply by 4 ...	...	...	...	...	2.73	2.41
Points { For time since Calving	...	...	...	...	10.9	9.64
{ For weight of Milk (lbs.)	...	...	...	...		.6
{ For weight of Fat (lbs. × 20)	...	...	...	...		58.1
{ For weight of Solids other than Fat	...	...	...	...		67.0
(lbs. × 4) ...	...	...	...	...		20.5
Total ...	...	...	...	...		136.2
Deductions ...	...	...	...	...		—
Points gained...	...	...	...	...		136.2
Remarks and Awards ...	...	...	...	...		2nd Prize.

MINNESOTA LEAD MILKMAKERS ASSOCIATION. DORN ON OR AFTER 1ST AUGUST, 1920.

Number ...	...	...	...	153	155	156	158
Name ...	...	...	...	Burton Ethel 8th.	Burton showy 7th.	Burton Cherry 5th.	Reiford Russett 2nd.
Born ...	...	...	...	Aug. 22, 1920.	Sept. 2, 1920.	Sept. 4, 1920.	Jan. 7, 1921.
Number of Calves ...	...	...	...	...	...	...	...
Last Calved ...	...	...	...	Aug. 25, 58	Sept. 7, 45	Sept. 13, 39	Sept. 1, 51
Days since Calving ...	...	...	...	1,112	1,265	1,214	1,097
Live weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	22-9 18-8	19-1 15-0	25-0 19-1	24-4 18-7
Weight of Milk, 2nd day ...	...	...	...	21-5 19-0	15-6 13-4	23-7 19-4	20-3 18-2
Total ...	...	...	...	44-4 37-8	34-7 28-4	48-7 38-5	44-7 36-9
Average ...	...	...	...	22-2 18-9	17-3 14-2	24-35 19-25	22-35 18-45
Percentage { Fat ...	...	...	...	3-71 4-39	2-93 6-79	3-73 4-15	4-29 5-18
Composition of { Solids other than Fat	...	...	...	9-33 9-19	9-35 8-97	9-33 9-27	8-55 8-68
the Milk. { Total Solids ...	...	...	...	13-04 13-58	12-28 15-76	13-06 13-42	12-84 13-86
Actual weight of Fat, in lbs. ...	...	...	...	825 .83	503 .97	91 .80	96 .96
Calculation of Points multiply by 20...	...	...	...	16-50 16-6	10-04 19-4	18-2 16-0	19-20 19-20
Actual weight of Solids other than Fat, in lbs.	...	...	...	2-07 1-74	1-62 1-27	2-27 1-78	1-91 1-60
Calculation of Points multiply by 4 ...	...	...	...	8-28 6-96	6-48 5-08	9-08 7-12	7-64 6-40
Points { For time since Calving	...	...	...	1-8	.6	—	1-1
{ For weight of Milk (lbs.)	...	...	...	41-1	31-5	43-6	40-8
{ For weight of Fat (lbs. × 20)	...	...	...	33-1	29-4	34-2	38-4
{ For weight of Solids other than Fat	...	...	...	15-2	11-6	16-2	14-0
(lbs. × 4) ...	...	...	...	91-2	73-0	94-0	94-3
Total ...	...	...	...	—	10-0	—	—
Deductions ...	...	...	...	91-2	63-0	94-0	94-3
Points gained...	...	...	...	Reserve and Highly Commended.	...	3rd Prize.	2nd Prize.
Remarks and Awards ...	...	...	...	...	...	...	...

CLASS 7.—LINCOLN RED SHORTHORN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1920)—Continued.

Number ... Name ...	...	...	...	...	...	159 Langford Froud 6th. Sept. 21, 1920. — Sept. 23. 29 1,040	160 Langford Queen 12th. Oct. 2, 1920. — Sept. 28. 24 1,105	166 Flamville Dairymaid 17th. Aug. 5, 1920. — Oct. 2. 20 1,216
						Morn Even 22-0 18-8 21-3 17-3 43-3 36-1 21-6 18-1	Morn Even 23-6 15-8 15-5 19-3 39-1 35-1 19-5 17-6	Morn Even 22-7 20-0 23-3 20-8 46-0 40-8 23-0 20-4
Weight of Milk, 1st day	...	...	...	...	...	3-48 5-07	3-88 4-91	5-06 6-30
Weight of Milk, 2nd day	...	...	...	...	...	9-16 9-17	9-44 8-99	9-50 9-68
Total	...	...	...	...	...	12-64 14-24	13-32 13-90	14-56 15-98
Average	...	...	...	...	...	752 -92	757 -86	1-16 1-29
Percentage { Fat ...	...	...	...	...	...	15-04 18-4	15-14 17-2	23-2 25-8
Composition { Solids other than Fat	...	...	...	...	...	1-98 1-66	1-84 1-58	2-18 1-98
the Milk. { Total Solids	...	...	...	...	...	7-92 6-64	7-36 6-32	8-72 7-92
Actual weight of Fat, in lbs. ...	...	...	...	...	...	...	...	...
Calculation of Points multiply by 20...	...	...	...	...	...	...	...	...
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	...	...	...
Calculation of Points multiply by 4 ...	...	...	...	...	...	...	...	...
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	39-7	37-1	43-4
	...	...	...	...	...	33-4	32-3	49-0
	...	...	...	...	...	14-6	13-7	16-6
	...	...	...	...	...	87-7	83-1	109-0
Total ...	...	...	...	...	...	...	...	...
Deductions ...	...	...	...	...	...	...	...	...
Points gained...	...	...	...	...	...	87-7	83-1	109-0
Remarks and Awards ...	...	...	...	...	...	Highly Commended.	Highly Commended.	1st Prize.

CLASS 8.—BRITISH FRIESIAN COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK,
BORN ON OR PREVIOUS TO 1ST AUGUST, 1918)

Number ...	...	...	...	...	180	181	185	189
Name ...	...	...	...	...	Blackmore Eta 2nd.	Myrtle Leaf.	Chadlesley Galy.	Horton Betty.
Born ...	...	...	...	...	April 4, 1915.	Nov. 10, 1916.	April 17, 1918.	July 5, 1918.
Number of Calves ...	...	...	...	...	—	—	—	—
Last Calved ...	...	...	...	...	Aug. 22.	June 15.	Aug. 31.	Sept. 2.
Days since Calving ...	...	...	...	...	61	129	52	50
Live weight, in lbs. ...	...	...	...	...	1,309	1,483	1,438	1,479
Weight of Milk, 1st day ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day ...	...	...	...	...	35.6 28.7	36.5 25.8	33.6 26.5	19.8 19.0
Total ...	...	...	...	...	34.9 29.9	36.6 33.6	31.5 29.9	18.1 19.6
Average ...	...	...	...	...	70.5 58.6	73.1 59.4	65.1 56.4	37.9 38.6
Percentage ...	...	...	...	...	35.2 29.3	36.5 29.7	32.5 28.2	18.9 19.3
Composition of ...	...	...	...	...	3.59 5.23	4.09 4.39	3.46 3.68	3.70 4.85
the Milk. ...	...	...	...	...	8.71 8.59	8.95 8.99	8.26 8.30	9.38 9.21
Actual weight of Fat, in lbs. ...	...	...	...	...	12.30 13.82	13.04 13.38	11.72 11.98	13.08 14.06
Calculation of Points multiply by 20... ..	...	...	...	...	1.26 1.54	1.49 1.30	1.13 1.04	.685 .98
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	25.2 30.8	29.8 26.0	22.6 20.8	13.70 19.6
Calculation of Points multiply by 4 ... ..	...	...	...	...	3.05 2.51	3.27 2.67	2.68 2.35	1.74 1.78
For time since Calving ... ..	...	...	...	...	12.20 10.04	13.08 10.68	10.72 9.40	6.96 7.12
For weight of Milk (lbs.) ... ..	...	...	...	...	2.1	8.9	1.2	1.0
For weight of Fat (lbs. × 20) ... ..	...	...	...	...	64.5	66.2	60.7	38.2
For weight of Solids other than Fat (lbs. × 4) ... ..	...	...	...	...	56.0	55.8	43.4	33.3
Total ... ..	...	...	...	...	22.2	23.8	20.1	14.1
Deductions ... ..	...	...	...	...	144.8	154.7	125.4	86.6
Points gained... ..	...	...	...	...	144.8	154.7	105.4	86.6
Remarks and Awards ... ..	...	...	...	...	2nd Prize.	1st Prize.		

CLASS 9.—BRITISH FRIESIAN COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN AFTER 1st AUGUST, 1918, AND PREVIOUS TO 1st AUGUST, 1920).

Number ... Name ...	...	...	...	...	...	196 Winchester Mollie.	197 Franks Bullseye.	200 Hache Herbrum Umbra.	201 Hache Cerkar Ursula.
						Nov. 17, 1919.	Mar. 14, 1919.	April 8, 1920.	Mar. 30, 1920.
Born ...	...	...	...	...	...	Sept. 25.	Sept. 27.	Sept. 9.	Sept. 26.
Number of Calves ...	...	...	...	...	...	27	25	43	26
Last Calved ...	...	...	...	...	...	1,214	1,386	1,154	1,294
Days since Calving ...	...	...	...	...	...	Morn	Morn	Morn	Morn
Live weight, in lbs. ...	...	...	...	...	...	Even	Even	Even	Even
Weight of Milk, 1st day ...	...	...	...	...	...	40-2	30-2	30-0	34-3
Weight of Milk, 2nd day ...	...	...	...	...	...	33-4	27-2	25-2	32-4
Total ...	...	...	...	...	...	41-6	32-2	27-2	31-3
Average ...	...	...	...	...	...	33-9	27-5	26-2	35-7
Weight of Milk, 1st day ...	...	...	...	...	...	81-8	62-4	57-2	70-0
Weight of Milk, 2nd day ...	...	...	...	...	...	67-3	54-7	51-4	63-7
Total ...	...	...	...	...	...	33-7	27-4	25-7	35-0
Average ...	...	...	...	...	...	40-9	31-2	28-6	31-9
Percentage { Fat ...	...	...	...	...	...	2-78	3-31	3-22	2-17
Composition of { Solids other than Fat	...	...	...	...	...	8-92	9-25	9-18	8-95
the Milk. { Total Solids ...	...	...	...	...	...	11-70	14-30	12-40	11-12
Actual weight of Fat, in lbs. ...	...	...	...	...	...	1-14	1-03	1-27	1-76
Calculation of Points multiply by 20... Actual weight of Solids other than Fat, in lbs. Calculation of Points multiply by 4 ...	...	...	...	...	...	27-8	20-6	18-50	15-2
...	...	...	...	...	...	3-65	2-88	2-64	3-14
...	...	...	...	...	...	14-60	11-52	10-56	12-56
...	...	...	...	...	...	12-2	10-00	9-28	11-60
Points { For time since Calving ...	...	...	...	...	...	74-6	58-6	54-3	66-9
...	...	...	...	...	...	50-6	49-2	43-9	33-2
...	...	...	...	...	...	26-8	21-5	19-8	24-2
...	...	...	...	...	...	152-0	129-3	118-3	124-3
...	...	...	...	...	...	10-0	—	—	20-0
...	...	...	...	...	...	142-0	129-3	118-3	104-3
Remarks and Awards ...	...	...	...	...	...	1st Prize.	2nd Prize.	Highly Commended.	Highly Commended.

CLASS 9.—BRITISH FRIESIAN COWS (BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920)—Continued.

Number ... Name ...	...	...	...	...	202 Clockhouse Bessie. Oct. 8, 1918. — Aug. 26. 57 1,268	208 Hatham Duchess. Aug. 18, 1918. — Sept. 27. 25 1,322	209 Kuehworth Yards Matigold. Sept. 5, 1919. — Sept. 16. 36 1,426	210 Petygards Countess. Aug. 24, 1918. — Sept. 10. 42 1,322
Born ...	...	...	...	...	Morn	Morn	Morn	Morn
Number of Calves	...	...	...	...	Even	Even	Even	Even
Last Calved	...	...	...	...	27-3	29-0	35-8	25-9
Days since Calving	...	...	...	...	25-1	26-2	20-5	20-0
Live weight, in lbs.	...	...	...	...	26-2	27-0	30-6	28-9
...	...	...	...	...	53-5	57-3	66-4	54-8
...	...	...	...	...	48-3	53-2	46-3	46-3
...	...	...	...	...	24-2	28-6	23-2	23-2
...	...	...	...	...	26-7	26-6	33-2	27-4
Weight of Milk, 1st day	...	...	...	...	3-84	3-28	4-54	3-20
Weight of Milk, 2nd day	...	...	...	...	4-49	3-86	3-62	4-08
Total	...	...	...	...	8-06	9-24	8-90	8-62
Average	...	...	...	...	12-50	12-52	13-44	11-28
Percentage of Fat ...	...	...	...	...	1-03	1-09	1-51	1-88
Composition of Fat ...	...	...	...	...	20-6	21-8	30-2	17-6
the Milk. { Solids other than Fat	...	...	...	...	2-32	2-13	2-95	2-21
Total Solids	...	...	...	...	9-28	8-52	11-80	8-48
Actual weight of Fat, in lbs. ...	...	...	...	...	1-7	—	—	—
Calculation of Points multiply by 20...	...	...	...	...	50-9	55-2	56-4	50-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	42-4	39-4	47-0	36-6
Calculation of Points multiply by 4 ...	...	...	...	...	17-8	20-3	20-3	16-9
For time since Calving	...	...	...	...	112-8	114-9	123-7	104-3
For weight of Milk (lbs.)	...	...	...	...	—	—	—	10-0
For weight of Fat (lbs. × 20)	...	...	...	...	112-8	114-9	123-7	94-3
For weight of Solids other than Fat	...	...	...	...	—	—	—	—
(lbs × 4) ...	...	...	...	...	—	—	—	—
Total ...	...	...	...	...	—	—	—	—
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	Highly Commended.	Highly Commended.	Reserve and Highly Commended.	Highly Commended.

CLASS 12.—SOUTH DEVON COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK).

Number ...	...	...	...	232	233	235
Name ...	...	...	...	Netton Lily.	Pinkie.	Milkaway.
Born ...	...	...	...	Mar. 1, 1914.	Feb. 10, 1917.	Dec. 30, 1917.
Number of Calves	...	...	...	Sept. 24.	Sept. 25.	Aug. 30.
Last Calved	...	...	...	28	27	53
Days since Calving	...	...	...	1,711	1,462	1,649
Live weight, in lbs.	...	...	...	Morn	Morn	Morn
	...	...	...	Even	Even	Even
Weight of Milk, 1st day	...	...	...	23-3	23-6	24-3
Weight of Milk, 2nd day	...	...	...	27-7	18-8	22-4
Total	...	...	...	29-4	21-3	26-1
Average ...	...	...	...	28-5	17-6	24-1
	...	...	...	57-7	44-9	50-4
	...	...	...	56-2	36-4	46-5
	...	...	...	28-8	22-4	25-2
	...	...	...	28-1	18-2	23-3
Percentage	...	...	...	4-08	6-44	3-49
Composition	...	...	...	9-98	8-56	9-39
of Solids other than Fat	...	...	...	14-06	14-80	12-88
the Milk.	...	...	...	16-20	14-80	14-20
Total Solids	...	...	...	1-18	1-14	1-88
Actual weight of Fat, in lbs.	...	...	...	1-81	1-14	1-18
Calculation of Points multiply by 20...	...	...	...	23-6	19-2	17-6
	...	...	...	36-2	22-8	23-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	2-87	1-56	2-37
Calculation of Points multiply by 4 ...	...	...	...	11-48	6-24	9-48
	...	...	...	11-10	6-24	8-52
For time since Calving	...	...	...	—	—	1-3
For weight of Milk (lbs.)	...	...	...	56-9	40-6	48-5
For weight of Fat (lbs. × 20)	...	...	...	59-8	42-2	41-2
For weight of Solids other than Fat	...	...	...	22-5	13-9	18-0
(lbs. × 4) ...	...	...	...	139-2	96-5	109-0
Total ...	...	...	...	—	—	—
Deductions	...	...	...	139-2	96-5	109-0
Points gained...	...	...	...	1st Prize.	2nd Prize.	2nd Prize.
	...	...	...	South Devon Herd Book	South Devon Herd Book	South Devon Herd Book
	...	...	...	Society's Prize.	Society's Prize.	Society's Prize.
Remarks and Awards ...	...	...	...	...	...	...

CLASS 13.—DEVON COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK, OR ENTERED IN THE SUPPLEMENTAL REGISTER OF SUCH HERD BOOK).

Number ...	...	...	...	237 Compton Handsome.	238 Wyatford Molly.	239 Compton Dint 2nd.	240 Lovely 4th.
Name ...	...	...	...	Jan. 16, 1912.	Jan. 16, 1913.	Dec. 19, 1916.	May 5, 1918.
Born ...	...	...	...	Oct. 7.	Aug. 28.	Sept. 19.	Aug. 16.
Number of Calves ...	...	...	...	15	55	33	67
Last Calved ...	...	...	...	1,276	1,300	1,134	1,279
Days since Calving ...	...	...	...	Morn	Morn	Morn	Morn
Live weight, in lbs. ...	...	...	...	Even	Even	Even	Even
Weight of Milk, 1st day ...	...	...	...	28-9	29-7	20-3	21-2
Weight of Milk, 2nd day ...	...	...	...	29-2	26-7	19-9	20-5
Total ...	...	...	...	58-1	56-4	40-2	41-7
Average ...	...	...	...	29-0	28-2	20-1	20-8
Percentage { Fat ...	...	...	...	3-72	3-62	4-62	3-77
Composition of { Solids other than Fat	...	...	...	9-96	8-66	9-34	9-29
the Milk. { Total Solids ...	...	...	...	13-68	12-28	13-96	13-06
Actual weight of Fat, in lbs. ...	...	...	...	1-08	1-02	1-01	1-13
Calculation of Points multiply by 20 ...	...	...	...	21-6	20-4	19-50	15-68
Actual weight of Solids other than Fat, in lbs.	...	...	...	2-90	2-50	1-97	1-94
Calculation of Points multiply by 4 ...	...	...	...	11-60	10-00	7-88	6-96
Points { For time since Calving ...	...	...	...	54-9	50-9	37-4	2-7
	...	...	...	48-8	41-6	39-7	40-0
	...	...	...	21-6	17-5	14-4	38-3
	...	...	...	125-3	111-5	91-5	14-7
Total ...	...	...	...	125-3	111-5	91-5	95-7
Deductions ...	...	...	...	125-3	111-5	91-5	95-7
Points gained ...	...	...	...	1st Prize.	2nd Prize.	Reserve and	3rd Prize.
Remarks and Awards ...	...	...	...	Busk Cup.	Busk Cup.	Highly Commended.	Reserve for Busk Cup.

CLASS 13.—DEVON COWS—Continued.

Number ...	...	...	...	...	...	241
Name ...	...	...	...	...	...	Wynford Quince.
Born ...	...	...	...	...	...	Feb. 6, 1919.
Number of Calves	...	...	...	...	...	—
Last Calved ...	...	...	...	...	...	Sept. 16,
Days since Calving	...	...	...	...	...	36
Live weight, in lbs.	...	...	...	...	...	1,366
Weight of Milk, 1st day	...	...	...	...	...	Morn
Weight of Milk, 2nd day	...	...	...	...	...	Even
Total ...	...	...	...	...	...	17.5 13.7
Average ...	...	...	...	...	...	19.3 14.1
Percentage { Fat ...	...	...	...	...	...	36.8 27.8
Composition of { Solids other than Fat	...	...	...	...	...	18.4 13.9
the Milk. { Total Solids	...	...	...	...	...	4.60 4.50
Actual weight of Fat, in lbs. ...	...	...	...	...	...	9.66 9.72
Calculation of Points multiply by 20...	...	...	...	...	...	14.26 14.22
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	846 .63
Calculation of Points multiply by 4 ...	...	...	...	...	...	16.92 12.6
Points { For time since Calving For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	1.78 1.36
	...	...	...	...	...	7.12 5.44
	—
	...	...	...	...	...	32.3
Total ...	...	...	...	...	...	29.5
Deductions ...	...	...	...	...	...	12.6
Points gained...	...	...	...	...	...	74.4
Remarks and Awards ...	...	...	...	...	...	74.4

CLASS 15.—RED POLL COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920).

Number	259	263	264	265
Name	Colworth Hazel.	Maddler Starlight.	Mendham Downager.	Seven Springs Queen Ytha
Born	Nov. 4, 1919.	Jan. 24, 1919.	Aug. 1, 1919.	Mar. 16, 1919.
Number of Calves	—	—	—	—
Last Calved	Aug. 21.	Oct. 3.	Aug. 29.	Aug. 27.
Days since Calving	62	19	54	56
Live weight, in lbs.	1,028	1,208	1,294	1,050
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	17.5 13.3	23.9 20.6	24.5 23.4	25.6 21.5
Total	18.3 13.6	25.7 20.0	28.1 23.9	24.2 19.3
Average	35.8 26.9	49.6 40.6	52.6 47.3	49.8 40.8
Percentage of Fat	17.9 13.5	24.8 20.3	26.3 23.7	24.9 20.4
Composition of Solids other than Fat	4.75 4.80	3.96 5.21	2.28 3.24	3.45 5.21
the Milk. { Total Solids	9.31 9.32	9.78 9.79	8.70 8.66	9.03 8.91
Actual weight of Fat, in lbs.	14.06 14.12	13.74 15.00	10.98 11.90	12.48 14.12
Calculation of Points multiply by 20... {85 .65	.98 1.06	.60 .77	.86 1.06
Actual weight of Solids other than Fat, in lbs.	17.0 13.0	19.6 21.2	12.0 15.4	17.2 21.2
Calculation of Points multiply by 4 ... {	1.67 1.26	2.42 1.98	2.28 2.07	2.25 1.82
Points { For time since Calving	6.7 5.0	9.7 7.9	9.1 8.3	9.00 7.3
For weight of Milk (lbs.)	2.2	—	1.4	1.6
For weight of Fat (lbs. × 20)	31.4	45.1	50.0	45.3
For weight of Solids other than Fat (lbs. × 4)	30.0	40.8	27.4	38.4
Total	11.7	17.6	17.4	16.3
Deductions	75.3	103.5	96.2	101.6
Points gained... {	—	—	10.0	—
Remarks and Awards	75.3	103.5	86.2	101.6
		3rd Prize.	Highly Commended.	Reserve and Highly Commended.

CLASS 15.—RED POLL COWS (BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920)—Continued.

Number ... Name ...	...	...	...	...	...	266 Seven Springs Luphe	267 Soham Rubicon.	268 Irruton Ruth.	269 Basilton Fairy.
Born ...	...	...	...	...	...	Sept. 26, 1919.	Nov. 13, 1918.	Aug. 14, 1919.	Dec. 25, 1918.
Number of Calves ...	...	...	...	...	...	—	—	—	—
Last Calved ...	...	...	...	...	...	Sept. 20. 32	Sept. 6. 46	Sept. 20. 32	Sept. 17. 35
Days since Calving ...	...	...	...	...	...	1,239	1,080	1,321	1,183
Live weight, in lbs. ...	...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	...	...	28-0 24-7	29-2 22-5	21-9 18-5	29-0 23-2
Weight of Milk, 2nd day ...	...	...	...	...	...	28-5 23-7	26-7 19-2	21-8 20-3	26-5 26-5
Total ...	...	...	...	...	...	56-5 48-4	55-9 41-7	43-7 38-8	55-5 52-7
Average ...	...	...	...	...	...	28-2 24-2	27-9 20-9	21-8 19-4	27-7 26-4
Percentage { Fat ...	...	...	...	...	...	3-73 4-17	4-20 5-29	4-77 5-65	2-15 2-98
Composition of { Solids other than Fat	...	...	...	...	...	9-29 9-07	8-58 8-75	9-65 9-51	8-67 8-56
the Milk. { Total Solids	...	...	...	...	...	13-02 13-24	12-78 14-04	14-42 15-16	10-82 11-54
Actual weight of Fat, in lbs. ...	...	...	...	...	...	1-05 1-06	1-17 1-11	1-03 1-09	595 79
Calculation of Points multiply by 20...	...	...	...	...	...	21-0 21-2	23-4 22-2	20-6 21-8	11-9 15-8
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	2-62 2-21	2-40 1-83	2-11 1-85	2-4 2-26
Calculation of Points multiply by 4 ...	...	...	...	...	...	10-5 8-8	9-6 7-3	8-4 7-4	9-6 9-0
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	—	—	—	—
	...	...	...	...	...	52-4	48-8	41-2	54-1
	...	...	...	...	...	42-2	45-6	42-4	27-7
	...	...	...	...	...	19-3	16-9	15-8	18-6
Total ...	...	...	...	...	...	113-9	111-9	99-4	100-4
Deductions ...	...	...	...	...	...	—	—	—	20-0
Points gained...	...	...	...	...	...	113-9	111-9	99-4	80-4
Remarks and Awards ...	...	...	...	...	...	1st Prize.	2nd Prize. Reserve for Red Poll Cattle Society's Prize.	Highly Commended.	

CLASS 15.—RED POLL COWS (BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920)—Continued.

Number ...	...	...	...	...	...	272
Name ...	...	...	...	...	...	Rickmansworth Utopia v. 16.
Born ...	...	...	...	...	...	Jan. 12, 1920.
Number of Calves	...	...	...	...	...	—
Last Calved	...	...	...	...	...	Sept. 6.
Days since Calving	...	...	...	...	...	46
Live weight, in lbs.	...	...	...	...	...	1,198
Weight of Milk, 1st day	...	...	...	...	...	Morn Even
Weight of Milk, 2nd day	...	...	...	...	...	19.7 17.6
Total	...	...	...	...	...	21.9 18.1
Average	...	...	...	...	...	41.6 35.7
Percentage	...	...	...	...	...	20.8 17.9
Composition of	...	...	...	...	...	4.14 4.70
the Milk.	...	...	...	...	...	9.12 8.88
Total Solids	...	...	...	...	...	13.26 13.58
Actual weight of Fat, in lbs.	...	...	...	...	...	-.86 -.84
Calculation of Points multiply by 20...	...	...	...	...	...	17.2 16.8
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	1.91 1.58
Calculation of Points multiply by 4 ...	...	...	...	...	...	7.6 6.3
Points	...	...	...	...	...	-.6
For time since Calving	...	...	...	...	...	38.7
For weight of Milk (lbs.)	...	...	...	...	...	34.0
For weight of Fat (lbs. \times 20)	...	...	...	...	...	13.9
For weight of Solids other than Fat	...	...	...	...	...	87.2
(lbs. \times 4) ...	...	...	...	...	...	—
Total	...	...	...	...	...	87.2
Deductions	...	...	...	...	...	—
Points gained...	...	...	...	...	...	87.2
Remarks and Awards	...	...	...	...	...	Highly Commended.

CLASS 16.—RED POLL HEIFERS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK,
BORN ON OR AFTER 1ST AUGUST, 1920).

Number ...	...	...	...	274	278	280	283
Name ...	...	...	...	Lowther Almond.	Kirton Doru.	Dalhousie Russell Robbery 4th.	Seven Springs Barry.
Born ...	...	...	...	Oct. 23, 1920.	Sept. 3, 1920.	Jan. 14, 1921.	Oct 25, 1920.
Number of Calves ...	...	...	...	Sept. 7.	Sept. 10.	Sept. 9.	Sept. 25.
Last Calved ...	...	...	...	45	42	43	27
Days since Calving ...	...	...	...	1,008	1,242	1,074	910
Live weight, in lbs. ...	...	...	...	Morn	Morn	Morn	Morn
Weight of Milk, 1st day ...	...	...	...	21-5	17-2	20-5	19-8
Weight of Milk, 2nd day ...	...	...	...	22-4	15-4	20-4	17-6
Total ...	...	...	...	43-9	32-6	40-9	19-7
Average ...	...	...	...	21-9	16-4	20-4	39-5
Percentage { Fat ...	...	...	...	4-05	3-09	3-49	5-19
Composition of { Solids other than Fat ...	...	...	...	9-35	8-91	8-83	9-15
the Milk. { Total Solids ...	...	...	...	13-40	12-00	12-32	14-34
Actual weight of Fat, in lbs. ...	...	...	...	885	56	71	1-02
Calculation of Points multiply by 20 ...	...	...	...	17-70	11-2	14-2	20-4
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	2-05	1-62	1-81	1-81
Calculation of Points multiply by 4 ...	...	...	...	8-20	6-5	7-2	7-2
Points { For time since Calving ...	...	...	...	5	2	3	—
	...	...	...	38-3	35-0	36-6	38-0
	...	...	...	32-7	25-6	26-8	42-8
	...	...	...	14-4	12-4	13-0	13-8
Total ...	...	...	...	85-9	73-2	76-7	94-6
Deductions ...	...	...	...	—	—	—	—
Points gained ...	...	...	...	85-9	73-2	76-7	94-6
Remarks and Awards ...	...	...	...	2nd Prize Reserve for Red Poll Cattle Society's Prize.	Reserve and Highly Commended.	3rd Prize. Red Poll Cattle Society's Prize.	1st Prize.

CLASS 19.—AYRSHIRE COWS.

Number ... Name	306 Aikenbar Kate 3rd Mar. 20, 1918.	310 Rassidy Helga. Mar. 23, 1919.	316 Barr Amelia. Mar. 20, 1916.	317 Barr Phil. April, 1917.
Born
Number of Calves
Last Calved
Days since Calving
Live weight, in lbs.
Weight of Milk, 1st day
Weight of Milk, 2nd day
Total
Average
Percentage of Fat
Composition of Solids other than Fat
the Milk. { Total Solids
Actual weight of Fat, in lbs.
Calculation of Points multiply by 20
Actual weight of Solids other than Fat, in lbs.
Calculation of Points multiply by 4
Points { For time since Calving
{ For weight of Milk (lbs.)
{ For weight of Fat (lbs. × 20)
{ For weight of Solids other than Fat (lbs. × 4)
Total
Deductions
Points gained
Remarks and Awards

Class 19.—AYRSHIRE COWS.—Continued

Number ...	...	...	...	...	...	318	319
Name ...	...	...	...	...	...	Santlode Rosie 2nd.	Neitherton Queen Greenfield 10th.
Born ...	...	...	...	...	...	April 9, 1916.	Jan. 28, 1920.
Number of Calves	...	...	...	...	...	Oct. 2.	Aug. 30.
Last Calved	...	...	...	...	...	20	53
Days since Calving	...	...	...	...	...	1,186	1,209
Live weight, in lbs.	...	...	...	...	...	Morn	Morn
Weight of Milk, 1st day	...	...	...	...	...	Even	Even
Weight of Milk, 2nd day	...	...	...	...	...	34.5	18.8
Total	...	...	...	...	...	28.8	15.2
Average	...	...	...	...	...	34.6	19.6
Percentage of Fat	...	...	...	...	...	27.5	16.2
Composition of the Milk.	...	...	...	...	...	69.1	38.4
Actual weight of Fat, in lbs.	...	...	...	...	...	50.3	31.4
Calculation of Points multiply by 20...	...	...	...	...	...	34.5	19.2
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	28.2	15.7
Calculation of Points multiply by 4 ...	...	...	...	...	...	4.32	4.62
Points	...	...	...	...	...	4.17	4.24
For time since Calving	...	...	...	...	...	9.20	9.14
For weight of Milk (lbs.)	...	...	...	...	...	9.17	9.26
For weight of Fat (lbs. × 20)	...	...	...	...	...	13.52	13.88
For weight of Solids other than Fat (lbs. × 4)	...	...	...	...	...	1.49	.73
Total	...	...	...	...	...	29.8	16.3
Deductions	...	...	...	...	...	3.17	1.76
Points gained...	...	...	...	...	...	12.7	7.0
3rd Prize.	...	...	...	...	...	62.7	1.3
...	...	...	...	...	...	53.4	34.9
...	...	...	...	...	...	23.0	30.9
...	...	...	...	...	...	139.1	12.8
...	...	...	...	...	...	139.1	79.9
...	...	...	...	...	...	139.1	79.9
Remarks and Awards ...	...	...	...	...	...	3rd Prize.	

CLASS 20.—**AYRSHIRE HEIFERS** (REGISTERED OR ELIGIBLE FOR REGISTRATION WITH A NUMBER IN THE HERD BOOK OR IN THE APPENDICES, BORN ON OR AFTER 1ST AUGUST, 1920).

Number Name	321 Aitkenbar Winnie.	323 Bargenoch Stella.	327 Cargenholm Wood Lady Sals.	328 Cargenholm Maggie.
Born	Aug. 12, 1920.	Nov. 29, 1920.	Feb. 3, 1921.	Feb. 12, 1921.
Number of Calves	—	—	—	—
Last Calved	Oct. 8.	Sept. 20.	Sept. 14.	Sept. 20.
Days since Calving	14	32	38	32
Live weight, in lbs.	1,019	1,180	835	890
	Morn	Morn	Morn	Morn
	Even	Even	Even	Even
Weight of Milk, 1st day	25.7	21.2	26.5	21.8
Weight of Milk, 2nd day	26.0	21.9	25.4	21.0
Total	51.7	43.1	51.9	42.8
Average	25.8	21.5	25.9	21.4
Percentage	5.15	3.69	3.80	3.72
Composition of	9.45	9.53	9.12	9.54
the Milk.	14.60	13.22	12.92	13.26
Actual weight of Fat, in lbs.	1.33	.795	.98	.795
Calculation of Points multiply by 20...	26.6	15.90	18.6	15.9
Actual weight of Solids other than Fat, in lbs.	2.44	2.05	2.36	2.05
Calculation of Points multiply by 4...	9.8	8.20	9.2	8.20
Points	45.6	39.4	47.0	39.9
For weight of Milk (lbs.)	49.0	32.0	38.4	31.7
For weight of Solids other than Fat	17.2	15.0	17.1	15.2
(lbs. × 4)	111.8	86.4	102.5	86.8
Total	111.8	86.4	102.5	86.8
Deductions	—	—	—	—
Points gained...	111.8	86.4	102.5	86.8
Remarks and Awards	1st Prize, Reserve for Rowallan Cup.	Highly Commended.	3rd Prize.	Highly Commended.

CLASS 20.—AYRSHIRE HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1920)—Continued.

Number ...	...	...	...	...	329	332	333	335
Name ...	...	...	...	...	Caron Helen Maude 16th	Holsland Lotlic.	Holsland Janet.	Netherton Nesta 2nd.
Born ...	...	...	...	...	Jan. 14, 1921.	Mar. 10, 1921.	Jan. 27, 1921.	Feb. 3, 1921.
Number of Calves ...	...	...	...	...	Sept. 26.	Sept. 20.	Sept. 26.	Oct. 2.
Last Calved ...	...	...	...	...	26	32	26	20
Days since Calving ...	...	...	...	...	891	1,160	1,068	1,123
Live weight, in lbs. ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	...	27-8 22-1	20-4 18-0	15-2 14-3	13-4 12-4
Weight of Milk, 2nd day ...	...	...	...	...	26-3 24-1	22-4 19-2	16-4 14-9	12-6 11-4
Total ...	...	...	...	...	54-1 46-2	42-8 37-2	31-6 29-2	26-0 23-8
Average ...	...	...	...	...	27-0 23-1	21-4 18-6	15-8 14-6	13-0 11-9
Percentage ...	...	...	...	...	3-65 4-46	4-02 5-10	3-85 4-30	3-80 4-21
Composition of ... the Milk. { Solids other than Fat	...	...	...	...	9-15 9-28	9-22 9-44	9-47 9-24	9-14 8-93
Actual weight of Fat, in lbs. ...	...	...	...	...	12-80 13-74	13-24 14-54	13-32 13-54	12-94 13-14
Calculation of Points multiply by 20 ...	...	...	...	...	985 1-03	86 95	61 63	495 5
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	19-70 20-6	17-2 19-0	12-2 12-6	9-9 10-0
Calculation of Points multiply by 4 ...	...	...	...	...	2-46 2-14	1-98 1-76	1-50 1-35	1-19 1-06
Points { For time since Calving ...	...	...	...	...	9-8 8-6	7-92 7-0	6-0 5-4	4-8 4-2
For weight of Milk (lbs.) ...	...	...	...	...	50-1	40-0	30-4	24-9
For weight of Fat (lbs. × 20) ...	...	...	...	...	40-3	36-2	24-8	19-9
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	18-4	14-9	11-4	9-0
Total ...	...	...	...	...	108-8	91-1	66-6	53-8
Deductions ...	...	...	...	...	—	—	—	—
Points gained ...	...	...	...	...	108-8	91-1	66-6	53-8
Remarks and Awards ...	...	...	...	...	2nd Prize.	Reserve and Highly Commended.	Highly Commended.	—

CLASS 21.—GUERNSEY COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN ON OR PREVIOUS TO 1ST AUGUST, 1918).

Number Name	...	...	...	...	338 Princess of Caillotte, etc. Mar. 7, 1912. June 4. 140 1101	342 Lizette of St. Catherine. June 20, 1918. April 11. 194 924	343 Masher Girl of the Manx Feb. 8, 1916. Sept. 5. 47 907	344 Rowanberry of Goodstone. April 23, 1916. Sept. 18. 34 958
Born	...	...	...	...	Morn 19-1	Morn 17-0	Morn 14-7	Morn 18-8
Number of Calves	...	...	...	...	Even 16-9	Even 12-7	Even 11-1	Even 13-9
Last Calved	...	...	...	...	23-5	14-7	15-4	16-5
Days since Calving	...	...	...	...	42-6	31-7	30-1	35-3
Live weight, in lbs.	...	...	...	...	34-6	24-7	22-1	26-0
Weight of Milk, 1st day	...	...	...	...	17-3	15-8	15-0	17-6
Weight of Milk, 2nd day	...	...	...	...	21-3	12-4	11-1	13-0
Total	...	...	...	...	5-45	4-37	3-74	3-14
Average	...	...	...	...	9-45	5-37	4-75	4-17
Percentage of Fat	...	...	...	...	14-90	9-49	9-24	9-44
Composition of Solids other than Fat	...	...	...	...	1-16	13-86	12-98	12-58
the Milk. { Total Solids	...	...	...	...	23-2	13-9	11-2	13-22
Actual weight of Fat, in lbs.	...	...	...	...	1-06	13-3	10-6	11-0
Calculation of Points multiply by 20...	...	...	...	...	2-02	1-40	1-39	1-66
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	8-1	6-0	5-6	6-6
Calculation of Points multiply by 4	...	...	...	...	10-0	12-0	7	—
Points { For time since Calving	...	...	...	...	38-6	28-2	26-1	30-6
For weight of Milk (lbs.)	...	...	...	...	44-4	27-2	21-8	22-0
For weight of Fat (lbs. × 20)	...	...	...	...	14-7	10-6	9-7	11-3
For weight of Solids other than Fat	...	...	...	...	107-7	78-0	58-3	63-9
(lbs. × 4)	...	...	...	...	—	—	—	—
Total	...	...	...	...	107-7	78-0	58-3	63-9
Deductions	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards	...	...	...	...	1st Prize.	—	—	—

CLASS 22.—GUERNSEY COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK,
BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920).

Number	345	346	347	348
Name	Doona of Les Gaudes, Nov. 20, 1918.	Florida 2nd of the Brecon, April 16, 1919.	Myrtle, Lady and of Newgrove June 24, 1920.	Deane Smudgal, Sept. 7, 1919.
Born	Sept. 16, 36	Aug. 25, 58	July 11, 103	Sept. 27, 25
Number of Calves	994	1,014	955	891
Last Calved	Morn Even	Morn Even	Morn Even	Morn Even
Days since Calving	25-2 16-2	26-4 20-5	16-6 15-6	27-4 20-3
Live weight, in lbs.	13-1 14-7	26-0 19-7	17-2 13-6	25-9 21-5
Weight of Milk, 1st day	38-3 30-9	52-4 40-2	33-8 29-2	53-3 41-8
Weight of Milk, 2nd day	19-1 15-5	26-2 20-1	16-9 14-6	26-6 20-9
Total	3-17 6-77	3-86 4-65	5-59 8-05	4-24 6-68
Average	9-05 8-53	9-06 9-15	9-03 9-55	9-06 9-38
Percentage of Fat	12-22 15-30	12-92 13-80	15-52 17-60	13-30 15-06
Composition of Fat	61 1-05	1-03 9-35	9-45 1-18	1-17 1-19
Total Solids	12-2 21-0	20-6 18-7	18-9 23-6	23-4 23-8
Actual weight of Fat, in lbs.	1-73 1-32	2-37 1-84	1-69 1-40	2-50 1-97
Calculation of Points multiply by 20	6-9 5-3	9-5 7-4	6-8 5-6	10-0 7-9
Actual weight of Solids other than Fat, in lbs.	1-8	6-3	...
Calculation of Points multiply by 4	34-6	46-3	31-5	47-5
For time since Calving	33-2	39-3	42-5	47-2
For weight of Milk (lbs.)	12-2	16-9	12-4	17-9
For weight of Fat (lbs. × 20)	80-0	104-3	92-7	112-6
For weight of Solids other than Fat (lbs. × 4)
Total	80-0	104-3	92-7	112-6
Deductions
Points gained
Remarks and Awards	2nd Prize.	2nd Prize.	Reserve, and Highly Commended.	1st Prize, Stagelhue Cup.

Class 22.—GUERNSEY COWS (BORN AFTER 1ST AUGUST, 1918, AND PREVIOUS TO 1ST AUGUST, 1920)—Continued.

Number ...	...	...	...	...	...	351	353
Name ...	...	...	...	...	...	Addington Begun 4th	Bealings Rose 2nd.
Born ...	...	...	...	...	...	Jan. 21, 1920.	May 13, 1919
Number of Calves ...	...	...	...	...	...	Aug. 27.	Sept. 17.
Last Calved ...	...	...	...	...	...	56	35
Days since Calving ...	...	...	...	...	...	802	1,090
Live weight, in lbs.	...	...	...	...	...	Morn	Even
Weight of Milk, 1st day	...	...	...	...	...	26-0	22-0
Weight of Milk, 2nd day	...	...	...	...	...	26-4	25-2
Total	...	...	...	...	...	52-4	47-2
Average	...	...	...	...	...	26-2	23-6
Percentage { Fat ...	...	...	...	...	...	3-19	4-19
Composition of { Solids other than Fat	...	...	...	...	...	9-11	9-05
the Milk. { Total Solids	...	...	...	...	...	12-30	13-24
Actual weight of Fat, in lbs.	...	...	...	...	...	84	92
Calculation of Points multiply by 20...	...	...	...	...	...	16-8	18-4
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	2-39	1-97
Calculation of Points multiply by 4 ...	...	...	...	...	...	9-6	7-9
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	1-6	...
	...	...	...	...	...	48-0	...
	...	...	...	...	...	35-2	...
	...	...	...	...	...	17-5	...
Total ...	...	...	...	...	...	102-3	...
Deductions	...	...	...	...	...	—	...
Points gained...	...	...	...	...	...	102-3	...
Remarks and Awards ...	...	...	...	...	...	3rd Prize.	Highly Commended.

CLASS 23.—GUERNSEY HELPERS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK, BORN ON OR AFTER 1ST AUGUST, 1920).

Number ...	...	...	...	...	...	358	368
Name ...	...	...	...	...	...	Public and Exchange	Sybil's Fairy.
Born ...	...	...	...	...	...	Aug. 15, 1920.	Aug. 4, 1920.
Number of Calves ...	...	...	...	...	...	Sept. 10,	Sept. 15,
Last Calved ...	...	...	...	...	...	42	37
Days since Calving ...	...	...	...	...	...	910	730
Live weight, in lbs. ...	...	...	...	...	...	Morn	Morn
Even	...	...	...	...	...	Even	Even
Weight of Milk, 1st day	...	...	...	...	...	24.5	17.8
Weight of Milk, 2nd day	...	...	...	...	...	22.6	15.2
Total	...	...	...	...	...	47.1	18.3
Average ...	...	...	...	...	...	23.5	13.9
Percentage	...	...	...	...	...	4.14	36.1
Composition of	...	...	...	...	...	9.04	18.0
the Milk.	...	...	...	...	...	13.18	14.6
Actual weight of Fat, in lbs. ...	...	...	...	...	...	4.97	4.16
Calculation of Points multiply by 20...	...	...	...	...	...	19.4	8.89
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	2.13	10.62
Calculation of Points multiply by 4 ...	...	...	...	...	...	8.5	13.12
For time since Calving	...	...	...	...	...	2	31
For weight of Milk (lbs.)	...	...	...	...	...	44.0	6.2
For weight of Fat (lbs. × 20)	...	...	...	...	...	42.2	12.2
For weight of Solids other than Fat	...	...	...	...	...	16.1	1.61
(lbs. × 4) ...	...	...	...	...	...	102.5	6.4
Total ...	...	...	...	...	...	102.5	5.2
Deductions ...	...	...	...	...	...	102.5	32.6
Points gained...	...	...	...	...	...	102.5	18.4
Remarks and Awards ...	...	...	...	...	...	1st Prize.	11.6
	...	...	...	...	...	Reserve for	62.6
	...	...	...	...	...	Staggenhoe Cup.	10.0
	...	...	...	...	...		52.6

CLASS 24.—JERSEY COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK).

Number ...	...	...	...	370 Miscellaneous.	371 Duchess of Aikman.	372 Thymc.	373 Nemudo.
Name ...	...	...	...	May 2, 1915.	June 6, 1914.	Jan. 5, 1920.	Jan. 13, 1917.
Born ...	...	...	...	...	...	...	...
Number of Calves ...	...	...	...	May 7.	Oct. 6.	July 2.	Mar. 16.
Last Calved ...	...	...	...	168	16	112	220
Days since Calving ...	...	...	...	824	722	876	868
Live weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	13-6 12-1	15-2 14-1	23-3 17-4	21-5 19-8
Weight of Milk, 2nd day ...	...	...	...	13-9 10-9	15-3 14-6	21-7 19-4	25-4 20-3
Total ...	...	...	...	27-5 23-0	30-5 28-7	45-0 36-8	49-9 40-1
Average ...	...	...	...	13-7 11-5	15-2 14-4	22-5 18-4	24-05 20-05
Percentage { Fat ...	...	...	...	4-71 7-68	3-03 6-64	5-20 5-72	4-51 5-98
Composition of { Solids other than Fat	...	...	...	9-93 10-08	9-35 9-48	9-26 9-50	9-19 9-06
the Milk. { Total Solids	...	...	...	14-64 17-76	12-38 16-12	14-46 15-22	13-70 15-04
Actual weight of Fat, in lbs. ...	...	...	...	645 88	46 96	1-17 1-06	1-125 1-20
Calculation of Points multiply by 20...	...	...	...	12-90 17-6	9-20 19-2	23-4 21-2	22-5 24-0
Actual weight of Solids other than Fat, in lbs.	...	...	...	1-36 1-16	1-42 1-37	2-08 1-75	2-29 1-82
Calculation of Points multiply by 4 ...	...	...	...	5-44 4-64	5-68 5-48	8-32 7-00	9-16 7-28
Points { For time since Calving ...	...	...	...	12-0	—	7-2	12-0
	...	...	...	25-2	29-6	40-9	45-0
	...	...	...	30-5	28-4	44-6	46-5
	...	...	...	10-1	11-2	15-3	16-4
Total ...	...	...	...	77-8	69-2	108-0	119-9
Deductions ...	...	...	...	—	—	—	—
Points gained...	...	...	...	77-8	69-2	108-0	119-9
Remarks and Awards ...	...	...	...	...	...	3rd Prize.	1st Prize, Reserve for National Milk Cup.

CLASS 24. JERSEY COWS—Continued.

Number ...	...	...	...	374	375	376	382
Name ...	...	...	...	llys of the Valley.	Pen.	Portia 2nd.	Fairmont Chase 1,4th.
Born ...	...	...	...	Oct. 26, 1917.	May 15, 1920.	April 22, 1920.	July 16, 1916.
Number of Calves ...	...	...	...	April 25.	May 15.	June 6.	May 22.
Last Calved ...	...	...	...	180	160	138	132
Days since Calving ...	...	...	...	900	834	842	946
Live weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	18-5 14-9	14-3 11-7	15-8 13-0	13-1 11-1
Weight of Milk, 2nd day ...	...	...	...	19-7 16-8	15-4 12-4	16-3 13-1	13-7 11-5
Total ...	...	...	...	38-2 31-7	20-7 24-1	32-1 26-1	26-8 22-9
Average ...	...	...	...	19-1 15-9	14-8 12-1	16-0 13-1	13-1 11-5
Percentage { Fat ...	...	...	...	6-49 6-00	3-71 5-24	4-85 6-04	4-17 6-24
Composition of { Solids other than Fat	...	...	...	9-81 9-62	9-21 9-52	9-21 9-42	9-35 8-52
the Milk. { Total Solids ...	...	...	...	16-30 15-62	12-92 14-76	14-06 15-46	13-52 14-76
Actual weight of Fat, in lbs. ...	...	...	...	1-24 9-55	5-55 6-64	5-75 7-95	5-6 7-2
Calculation of Points multiply by 20 ...	...	...	...	24-8 19-1	11-0 12-8	15-5 15-9	11-2 14-1
Actual weight of Solids other than Fat, in lbs.	...	...	...	1-88 1-53	1-36 1-16	1-48 1-24	1-25 1-08
Calculation of Points multiply by 4 ...	...	...	...	7-52 6-12	5-44 4-64	5-92 4-96	5-00 3-92
Points { For time since Calving ...	...	...	...	12-0	12-0	9-8	11-2
{ For weight of Milk (lbs.) ...	...	...	...	35-0	26-9	29-1	24-9
{ For weight of Fat (lbs. × 20) ...	...	...	...	43-9	23-8	31-4	25-6
{ For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	13-6	10-1	10-9	8-9
Total ...	...	...	...	104-5	72-8	81-2	70-6
Deductions ...	...	...	...	...	...	...	...
Points gained ...	...	...	...	104-5	72-8	81-2	70-6
Remarks and Awards ...	...	...	...	Highly Commended.	...	...	...

CLASS 2A.—JERSEY COWS—Continued.

Number ... Name ...	...	...	...	...	394 Gloria June June 13, 1919, May 17, 158 896	397 Choir Mistress, July 29, 1919, July 6, 108 802	398 Rumonia Red Jan. 26, 1919, July 10, 101 778	399 Fontaine's Lala Feb. 12, 1920, Aug. 20, 63 791
Born ...	...	...	...	...	Morn	Morn	Morn	Morn
Number of Calves ...	...	...	...	...	Even	Even	Even	Even
Last Calved ...	...	...	...	...	14.4 10.4	10.9 17.3	11.4 13.2	21.4 17.1
Days since Calving ...	...	...	...	...	14.7 12.1	18.4 15.7	11.0 11.1	20.7 16.0
Lave weight, in lbs. ...	...	...	...	...	29.1 22.5	38.3 33.0	28.4 24.3	41.8 33.6
Weight of Milk, 1st day ...	...	...	...	...	14.5 11.3	19.1 16.5	14.2 12.2	20.9 16.8
Weight of Milk, 2nd day ...	...	...	...	...	5.74 5.71	4.64 6.00	4.50 6.00	4.74 5.71
Total ...	...	...	...	...	8.88 8.83	9.22 9.36	9.44 9.54	9.16 9.61
Average ...	...	...	...	...	14.62 15.54	13.86 15.36	13.91 15.51	14.20 15.32
Percentage { Fat ...	...	...	...	...	83.5 .76	89 .49	61 .73	90 .96
Composition of { Solids other than Fat	...	...	...	...	16.7 15.2	17.8 19.8	12.8 14.6	19.8 19.2
the Milk. { Total Solids ...	...	...	...	...	1.29 1.00	1.76 1.55	1.31 1.16	1.48 1.61
Actual weight of Fat, in lbs. ...	...	...	...	...	5.16 4.00	7.04 6.20	5.36 4.61	7.92 6.41
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	11.8	6.8	16.4	2.3
Calculation of Points multiply by 4 ...	...	...	...	...	25.8	35.6	26.4	37.7
Points { For time since Calving ... For weight of Milk (lbs.) ... For weight of Fat (lbs. \times 20) ... For weight of Solids other than Fat (lbs. \times 4) ...	...	...	...	...	31.9	37.6	27.1	39.0
	...	...	...	...	9.2	13.2	10.0	14.4
	...	...	...	...	78.7	93.2	70.2	93.4
	...	...	...	...	78.7	93.2	70.2	93.4
Remarks and Awards ...	...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 24.—JERSEY COWS—Continued.

Number	...	...	...	400	402	404	407
Name	...	...	...	Biana's Rose.	You'll Do's Triumph.	Crystal Star's Sybil.	Evergreen.
Born	...	...	...	Dec. 5, 1918.	Feb. 24, 1916.	Jan. 15, 1920.	Sept. 4, 1916.
Number of Calves	...	...	...	Sept. 20.	July 6.	Sept. 26.	May 11.
Last Calved	...	...	...	32	108	26	164
Days since Calving	...	...	...	924	818	730	882
Live weight, in lbs.	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day	...	...	...	27-6 22-7	18-5 13-6	17-1 14-7	19-3 15-5
Weight of Milk, 2nd day	...	...	...	26-0 20-8	17-5 14-8	16-8 15-7	18-7 18-2
Total	...	...	...	53-6 43-5	36-0 28-4	33-9 30-4	38-0 33-7
Average	...	...	...	26-8 21-7	18-0 14-2	16-9 15-2	19-0 16-9
Percentage of Fat	...	...	...	4-77 6-22	5-70 7-57	5-41 5-93	5-70 6-38
Composition of Solids other than Fat	...	...	...	9-37 9-40	9-84 9-67	9-55 9-45	9-36 9-22
the Milk. { Total Solids	...	...	...	14-14 15-62	15-54 17-24	14-96 15-38	15-06 15-60
Actual weight of Fat, in lbs.	...	...	...	1-28 1-35	1-03 1-07	.92 .905	1-08 1-08
Calculation of Points multiply by 20...	...	...	...	25-6 27-0	20-6 21-4	18-4 18-1	21-6 21-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	2-51 2-04	1-77 1-37	1-61 1-44	1-78 1-56
Calculation of Points multiply by 4	...	...	...	10-04 8-16	7-08 5-48	6-44 5-76	7-12 6-24
Points { For time since Calving	...	...	...	—	6-8	—	12-0
{ For weight of Milk (lbs.)	...	...	...	48-6	32-2	32-1	35-9
{ For weight of Fat (lbs. × 20)	...	...	...	52-6	42-0	36-5	43-2
{ For weight of Solids other than Fat	...	...	...	18-2	12-6	12-2	13-4
(lbs. × 4)	...	...	...	119-4	93-6	80-8	104-5
Total	...	...	...	—	—	—	—
Deductions	...	...	...	119-4	93-6	80-8	104-5
Points gained...	...	...	...	—	—	—	—
Remarks and Awards	...	...	...	2nd Prize.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 24.—JERSEY COWS—Continued.

Number	408	409
Name	Princess Marjohd,	Florida,
Born	April 26, 1920,	June 26, 1917,
Number of Calves
Last Calved	June 15,	July 21,
Days since Calving	129	93
Lave weight, in lbs.	800	806
Weight of Milk, 1st day	Morn	Even
Weight of Milk, 2nd day	16.7	23.3
Total	16.4	21.8
Average	33.1	45.1
Percentage of Fat	16.5	22.5
Composition of Solids other than Fat the Milk.	6.55	4.41
Actual weight of Fat, in lbs.	9.53	8.81
Calculation of Points multiply by 20...	16.08	13.22
Actual weight of Solids other than Fat, in lbs.	1.08	.99
Calculation of Points multiply by 4	21.6	19.8
Points	1.58	1.34
For time since Calving	6.32	5.36
For weight of Milk (lbs.)	8.9	5.3
For weight of Fat (lbs. × 20)	30.6	40.9
For weight of Solids other than Fat (lbs. × 4)	39.8	38.4
Total	11.7	14.5
Deductions	91.0	99.1
Points gained...	91.0	99.1
Remarks and Awards	Highly Commended.	Highly Commended.

CLASS 25.—JERSEY HEIFER (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN ON OR AFTER 1ST AUGUST, 1920) BRED IN GREAT BRITAIN OR IRELAND.

Number ...	412	413	414	416
Name ...	Letitia.	Golden Raspberry.	Blackie.	Wotton Sybil's Kid.
Born ...	April 7, 1921.	Dec. 29, 1920.	April 8, 1921.	Oct. 2, 1921.
Number of Calves ...	—	—	—	—
Last Calved ...	June 2.	Feb. 16.	July. 29.	Oct. 9.
Days since Calving ...	142	248	85	13
Live weight, in lbs. ...	767	784	768	628
Weight of Milk, 1st day ...	Morn	Morn	Morn	Morn
Weight of Milk, 2nd day ...	Even	Even	Even	Even
Total ...	15.6	15.0	16.0	13.6
Average ...	12.6	12.0	13.8	10.1
Percentage of Fat ...	15.4	15.9	15.9	15.2
Composition of Solids other than Fat ...	11.8	13.7	15.9	11.8
Total Solids ...	31.0	30.9	31.9	28.8
Actual weight of Fat, in lbs. ...	24.4	25.7	29.7	21.9
Calculation of Points multiply by 20 ...	15.5	15.4	15.9	14.4
Actual weight of Solids other than Fat, in lbs. ...	5.79	6.91	4.25	5.93
Calculation of Points multiply by 4 ...	9.45	8.43	4.92	6.24
For time since Calving ...	15.24	9.67	9.29	8.71
For weight of Milk (lbs.) ...	15.32	16.58	14.44	14.64
For weight of Fat (lbs. × 20) ...	90	1.07	6.75	85.5
For weight of Solids other than Fat (lbs. × 4) ...	18.0	21.4	13.5	17.1
Total ...	1.47	1.49	1.42	1.26
Deductions ...	5.88	5.96	5.68	5.04
Points gained ...	10.2	12.0	4.5	—
For time since Calving ...	27.7	28.3	30.8	25.4
For weight of Milk (lbs.) ...	32.3	43.2	28.1	30.8
For weight of Fat (lbs. × 20) ...	10.5	10.8	11.6	9.1
Total ...	80.7	94.3	75.0	65.3
Deductions ...	—	—	—	—
Points gained ...	80.7	94.3	75.0	65.3
Remarks and Awards ...	3rd Prize.	1st Prize.	Highly Commended.	Highly Commended.

CLASS 25. — JERSEY HEIFER (BRED IN GREAT BRITAIN OR IRELAND. BORN ON OR AFTER 1ST AUGUST, 1920).—Continued.

Number ...	...	...	...	418 Mithdal.	420 Golden Madeira.	421 Cryoblong: Chablis.	423 Lekford Three.
Name ...	...	...	...	June 17, 1921.	Mar. 16, 1921.	April 9, 1921.	Dec. 21, 1920.
Born ...	...	...	...	Oct. 9.	Mar. 25.	Aug. 2.	July 2.
Number of Calves ...	...	...	...	13	211	81	112
Last Calved ...	...	...	...	654	804	695	766
Days since Calving ...	...	...	...	...	...	...	...
Live weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	12-0	17-1	15-1	13-9
Weight of Milk, 2nd day ...	...	...	...	13-7	14-2	12-2	10-2
Total ...	...	...	...	26-6	31-3	17-0	13-7
Average ...	...	...	...	13-3	15-6	12-1	10-8
Percentage { Fat ...	...	...	...	...	...	...	...
Composition of { Solids other than Fat	...	...	...	4-70	6-40	5-26	4-61
the Milk. { Total Solids	...	...	...	10-00	9-52	9-58	9-69
Actual weight of Fat, in lbs. ...	...	...	...	14-70	15-92	15-36	14-30
Calculation of Points multiply by 20...	...	...	...	...	...	...	...
Actual weight of Solids other than Fat, in lbs.	...	...	...	-0-25	1-00	-81	-64
Calculation of Points multiply by 4 ...	...	...	...	12-5	20-00	16-2	12-8
Points { For time since Calving	...	...	...	1-33	1-49	1-17	1-34
{ For weight of Milk (lbs.)	...	...	...	5-32	5-96	4-68	5-36
{ For weight of Fat (lbs. × 20)	...	...	...	...	12-0	4-1	7-2
{ For weight of Solids other than Fat	...	...	...	24-2	28-4	28-2	24-3
(lbs. × 4)	...	...	...	22-5	36-2	31-0	23-9
Total ...	...	...	...	9-7	10-8	11-0	9-4
Deductions ...	...	...	...	56-4	87-4	74-3	64-8
Points gained...	...	...	...	56-4	87-4	74-3	64-8
Remarks and Awards ...	...	...	...	2nd Prize.	...	Highly Commended.	Highly Commended.

CLASS 25.—JERSEY HEIFER (BRED IN GREAT BRITAIN OR IRELAND. BORN ON OR AFTER 1ST AUGUST, 1920.)—Continued.

Number ...	...	...	...	424 Lingen Lass.	425 Oxford's Delicacy.	427 Paradise.	432 Neola of Castille.
Name ...	...	...	...	May 28, 1921.	Sept. 7, 1920.	Aug. 20, 1921.	May 6, 1921.
Born ...	...	...	...	June 29.	Sept. 19.	Sept. 12.	July 3.
Number of Calves ...	...	...	...	115	33	40	111
Last Calved ...	...	...	...	700	794	754	818
Days since Calving ...	...	...	...	Morn	Morn	Morn	Morn
Live weight, in lbs. ...	...	...	...	Even	Even	Even	Even
Weight of Milk, 1st day ...	...	...	...	14-9	10-8	12-6	12-9
Weight of Milk, 2nd day ...	...	...	...	12-9	9-1	12-2	12-9
Total ...	...	...	...	15-7	11-5	13-8	11-4
Average ...	...	...	...	12-3	8-5	11-1	9-1
Percentage of Fat ...	...	...	...	30-6	22-3	26-4	24-3
Composition of Solids other than Fat ...	...	...	...	25-2	17-6	23-3	18-7
the Milk. { Total Solids ...	...	...	...	12-6	8-8	11-7	9-4
Actual weight of Fat, in lbs. ...	...	...	...	5-10	5-24	5-04	5-35
Calculation of Points multiply by 20 ...	...	...	...	10-0	9-52	7-23	5-30
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	15-10	14-76	9-64	9-59
Calculation of Points multiply by 4 ...	...	...	...	7-8	6-85	15-28	14-94
Points { For time since Calving ...	...	...	...	14-8	9-4	16-06	14-80
{ For weight of Milk (lbs.) ...	...	...	...	15-6	11-7	17-0	13-0
{ For weight of Fat (lbs. × 20) ...	...	...	...	1-53	1-06	1-11	1-16
{ For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	6-12	4-24	4-44	4-64
Total ...	...	...	...	7-5	19-9	—	7-1
Deductions ...	...	...	...	27-9	21-1	24-9	21-5
Points gained ...	...	...	...	30-4	—	31-9	23-0
Remarks and Awards ...	...	...	...	11-2	7-6	9-5	8-2
...	...	...	...	77-0	48-6	66-3	59-8
...	...	...	...	77-0	48-6	66-3	59-8
...	...	...	...	Reserve and Highly Commended.	—	Highly Commended.	—

Class 26.—JERSEY HEIFER (ENTERED IN OR ELIGIBLE FOR THE JERSEY OR ENGLISH JERSEY HERD BOOK. BREED IN THE CHANNEL ISLANDS. BORN ON OR AFTER 1ST AUGUST, 1920).

Number	440 In Grade Herd After 1st Aug. 1921.	443 Meaner's Opal.	447 Magazine.	449 Zachariah.
Name	Aug. 4, 1921.	Oct. 15, 1920.	Mar. 26, 1921.	June 9, 1921.
Born	Sept. 30.	May 19.	Aug. 10.	Aug. 20.
Number of Calves	22	156	64	63
Last Calved	718	726	760	812
Days since Calving	Morn	Morn	Morn	Morn
Live weight, in lbs.	Even	Even	Even	Even
Weight of Milk, 1st day	19-3	15-3	13-1	14-9
Weight of Milk, 2nd day	11-7	11-1	10-8	13-3
Total	14-4	13-2	10-0	15-8
Average	33-7	28-5	25-7	30-7
Percentage	23-4	21-1	20-8	28-1
Composition of the Milk. { Fat	11-7	10-6	10-4	14-1
Actual weight of Fat, in lbs.	5-91	4-68	5-03	5-21
Calculation of Points multiply by 20	8-87	9-18	9-77	9-81
Actual weight of Solids other than Fat, in lbs.	14-78	13-86	14-80	15-02
Calculation of Points multiply by 4	-995	-665	-685	-80
Points { For time since Calving	19-9	13-3	13-0	16-0
For weight of Milk (lbs.)	1-49	1-31	1-25	1-51
For weight of Fat (lbs. × 20)	4-32	4-16	4-08	5-28
For weight of Solids other than Fat (lbs. × 4)	28-5	11-6	2-4	2-3
Total	35-5	24-8	23-2	29-4
Deductions	10-3	24-7	26-7	32-2
Points gained	74-3	9-4	9-1	11-3
Remarks and Awards	74-3	60-5	61-4	75-2
...	2nd Prize.	Reserve and Highly Commended.	3rd Prize.	1st Prize.

Class 27.—KERRY COWS.—Continued.

Number	...	...	...	...	456	457	464
Name	...	...	...	...	Buckhurst, Effra.	Buckhurst, Babbles.	Clara of Carlton.
Born	...	...	...	...	Jan. 12, 1915.	July 15, 1915.	Mar. 23, 1917.
Number of Calves	...	...	...	...	May, 11.	Aug. 19.	Sept. 19.
Last Calved	...	...	...	...	163	64	33
Days since Calving	...	...	...	...	789	878	954
Live weight, in lbs.	...	...	...	...	Morn	Morn	Morn
Weight of Milk, 1st day	...	...	...	...	Even	Even	Even
Weight of Milk, 2nd day	...	...	...	...	23-4	19-6	29-0
Total	...	...	...	...	23-3	15-6	23-3
Average	...	...	...	...	46-7	32-1	30-7
Percentage of Fat	...	...	...	...	23-35	16-05	59-7
Composition of Solids other than Fat	...	...	...	...	3-55	3-74	29-8
the Milk. { Total Solids	...	...	...	...	9-23	9-08	4-27
Actual weight of Fat, in lbs.	...	...	...	...	12-78	12-82	9-51
Calculation of Points multiply by 20...	...	...	...	...	83	40	13-78
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	16-6	12-0	13-78
Calculation of Points multiply by 4	...	...	...	...	2-16	1-46	1-28
Points { For time since Calving	...	...	...	...	8-64	5-84	25-6
{ For weight of Milk (lbs.)	...	...	...	...	12-0	3-4	2-84
{ For weight of Fat (lbs. × 20)	...	...	...	...	39-4	38-1	9-36
{ For weight of Solids other than Fat	...	...	...	...	28-6	29-1	8-40
{ (lbs. × 4)	...	...	...	...	14-5	14-4	52-4
Total	...	...	...	...	94-5	84-3	44-6
Deductions	...	...	...	...	94-5	84-3	17-8
Points gained...	...	...	...	...	94-5	84-3	114-8
Remarks and Awards	...	...	...	...	2nd and 3rd Prizes divided.	Reserve and highly commended.	1st Prize. English Kerry and Dexter Society's Cup.

CLASS 28.—KERRY HEIFER (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN ON OR AFTER 1ST AUGUST, 1920).

Number ...	...	...	...	...	467	Starlight of Warren.	470	Emerald of Warren.	471	Gimble of Warren.
Name ...	...	...	...	...	Cast-down Darkie.	Sept. 29, 1920.	Sept. 29, 1920.	Oct. 2, 1920.	Dec. 13, 1920.	
Born ...	...	...	...	...	Sept. 26, 26	April 20, 185	April 20, 185	May 7, 168	June 29, 115	
Number of Calves	...	...	...	...	766	750	750	662	738	
Last Calved	...	...	...	...		
Days since Calving	...	...	...	...		
Live weight, in lbs.	...	...	...	...		
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even	Morn Even	
Weight of Milk, 2nd day	...	...	...	...	14-8 13-2	8-0 6-0	12-6 9-9	12-6 9-9	7-9 7-0	
Total	...	...	...	...	15-8 12-7	7-6 7-0	10-7 11-3	10-7 11-3	8-2 7-7	
Average ...	...	...	...	...	30-6 25-9	15-6 13-0	23-3 21-2	23-3 21-2	16-1 14-7	
Percentage { Fat ...	...	...	...	...	15-3 13-0	7-8 6-5	11-6 10-6	11-6 10-6	8-0 7-4	
Composition of { Solids other than Fat	...	...	...	...	27-4 4-43	5-03 4-66	4-15 3-77	4-15 3-77	3-14 4-30	
the Milk. { Total Solids	...	...	...	...	9-58 9-75	9-77 9-68	9-57 9-57	9-57 9-57	9-38 9-66	
Actual weight of Fat, in lbs. ...	...	...	...	...	12-82 14-18	14-80 14-34	13-72 13-34	13-72 13-34	12-82 13-96	
Calculation of Points multiply by 20...	...	...	...	...	4-2 5-75	3-9 3-0	4-8 3-0	4-8 3-0	2-75 3-2	
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	8-4 11-5	7-8 6-0	9-6 8-0	9-6 8-0	5-5 6-4	
Calculation of Points multiply by 4 ...	...	...	...	...	1-47 1-27	7-6 6-3	1-11 1-62	1-11 1-62	7-50 7-2	
Points { For time since Calving	...	...	...	...	5-88 5-08	3-04 2-52	4-44 4-08	4-44 4-08	3-00 2-88	
{ For weight of Milk (lbs.)	...	...	...	...	12-0	12-0	12-0	12-0	7-5	
{ For weight of Fat (lbs. x 20)	...	...	...	...	28-3	14-3	22-2	22-2	15-4	
{ For weight of Solids other than Fat	...	...	...	...	19-9	13-8	17-6	17-6	11-9	
{ (lbs. x 4) ...	...	...	...	...	11-0	5-6	8-5	8-5	5-9	
Total ...	...	...	...	...	59-2	45-7	60-3	60-3	40-7	
Deductions ...	...	...	...	...	10-0					
Points gained...	...	...	...	...	49-2	45-7	60-3	60-3	40-7	
Remarks and Awards ...	...	...	...	...					1st Prize.	

CLASS 29.—DEXTER COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK).

Number ...	...	...	...	479	482	483	484
Name ...	...	...	...	La Mancha Madeleine, Ellongley Favourite,	Ellongley Favourite,	Ellongley Favourite,	Ellongley Favourite,
Born ...	...	...	...	Mar., 1913,	1914,	Oct. 23, 1917,	July 19, 1919,
Number of Calves ...	...	...	...	...	...	...	...
Last Calved ...	...	...	...	April 19,	May 9,	June 4,	May 8,
Days since Calving ...	...	...	...	186	106	140	167
Live weight, in lbs. ...	...	...	...	810	758	594	556
Weight of Milk, 1st day ...	...	...	...	Morn	Morn	Morn	Morn
Weight of Milk, 2nd day ...	...	...	...	Even	Even	Even	Even
Total ...	...	...	...	19-2 13-7	14-9 13-6	11-7 10-4	6-5 5-7
Average ...	...	...	...	17-8 12-5	14-8 12-7	12-3 9-8	6-8 4-9
Percentage of Fat ...	...	...	...	37-0 26-2	29-7 26-3	24-0 20-2	13-3 10-6
Composition of the Milk. { Total Solids ...	...	...	...	18-5 13-1	14-8 13-2	12-0 10-1	6-6 5-3
Actual weight of Fat, in lbs. ...	...	...	...	3-40 4-18	2-64 4-52	3-01 3-43	4-91 6-15
Calculation of Points multiply by 20... { Fat ...	...	...	...	9-17 9-08	9-04 9-04	8-85 8-79	9-27 9-57
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	12-66 13-26	11-68 13-56	12-46 12-22	14-18 15-72
Calculation of Points multiply by 4 ...	...	...	...	6-45 6-55	5-89 6-95	6-43 6-35	7-35 7-33
Points { For time since Calving ...	...	...	...	12-0	12-0	10-0	12-0
For weight of Milk (lbs.) ...	...	...	...	31-6	28-0	22-1	11-9
For weight of Fat (lbs. × 20) ...	...	...	...	23-9	19-7	15-6	13-1
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	11-5	10-2	7-8	4-5
Total ...	...	...	...	79-0	69-9	55-5	41-5
Deductions ...	...	...	...	—	10-0	—	—
Points gained... { Points ...	...	...	...	79-0	59-9	55-5	41-5
Remarks and Awards ...	...	...	...	1st Prize.	...	...	...
	...	...	...	Nutt Cup.	...	...	...

CLASS 30.—DEXTER HEIFER (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN ON OR AFTER 1ST AUGUST, 1920).

Number ...	...	...	...	487	488	489	491
Name ...	...	...	...	Brokenhurst Pansy.	Fillingley Forest Flower.	Fillingley Forest Footprint.	Braintree Black Tally.
Born ...	...	...	...	May 27, 1921.	Sept. 9, 1920.	July 28, 1921.	Sept. 28, 1920.
Number of Calves ...	...	...	...	June 24.	April 26.	Sept. 15.	March 16.
Last Calved ...	...	...	...	120	179	27	220
Days since Calving ...	...	...	...	482	530	498	612
Live weight, in lbs. ...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	9-4 7-5	8-8 7-5	7-0 6-0	12-3 10-0
Weight of Milk, 2nd day ...	...	...	...	9-6 7-7	8-7 6-4	7-0 5-5	12-0 7-4
Total ...	...	...	...	19-0 15-2	17-5 13-9	14-0 11-5	24-3 17-4
Average ...	...	...	...	9-5 7-6	8-7 7-0	7-0 5-8	12-1 8-7
Percentage of Fat ...	...	...	...	4-24 4-66	4-80 4-69	4-98 4-51	4-92 5-15
Composition of Solids other than Fat ...	...	...	...	9-14 9-50	9-20 9-09	9-42 9-35	9-34 9-47
the Milk.	...	...	...	13-38 14-16	14-00 13-78	14-40 13-86	14-26 14-62
Actual weight of Fat, in lbs. ...	...	...	...	4-05 3-55	4-42 3-33	3-35 2-26	3-95 3-45
Calculation of Points multiply by 20 ...	...	...	...	8-1 7-1	8-4 6-6	7-0 5-2	11-9 9-0
Actual weight of Solids other than Fat, in lbs.	...	...	...	8-7 7-2	8-0 6-4	4-66 5-4	1-13 8-2
Calculation of Points multiply by 4 ...	...	...	...	3-48 2-88	3-20 2-56	2-64 2-16	4-52 3-28
Points { For time since Calving ...	...	...	...	8-0	12-0	---	12-0
{ For weight of Milk (lbs.) ...	...	...	...	17-1	15-7	12-8	20-8
{ For weight of Fat (lbs. × 20) ...	...	...	...	15-2	15-0	12-2	20-9
{ For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	6-4	5-8	4-8	7-8
Total ...	...	...	...	46-7	48-5	29-8	61-5
Deductions ...	...	...	...	---	---	---	---
Points gained ...	...	...	...	46-7	48-5	29-8	61-5
Remarks and Awards ...	...	...	...	2nd Prize.	2nd Prize.	---	1st Prize.

CLASS 31.—COW OF ANY BREED—Continued.

Number ... Name ...	...	...	...	...	...	183		184	
						Beretles Silver Queen.		Cynric St. Malo.	
						Feb. 11, 1918.		Feb. 3, 1918.	
Born ...	...	...	...	...	...	Sept. 9.		Sept. 6.	
Number of Calves ...	...	...	...	...	...	43		46	
Last Calved ...	...	...	...	...	...	1,424		1,509	
Days since Calving ...	...	...	...	...	...	Morn.	After.	Morn.	After.
Live weight, in lbs. ...	...	...	...	...	...	Even.	Even.	Even.	Even.
Weight of Milk, 1st day ...	...	...	...	...	...	30.4	23.7	22.5	19.8
Weight of Milk, 2nd day ...	...	...	...	...	...	28.3	26.5	24.7	19.5
Total ...	...	...	...	...	...	58.7	50.2	46.9	39.3
Average ...	...	...	...	...	...	29.3	25.1	23.5	19.7
Percentage { Fat ...	...	...	...	...	...	3.66	3.90	3.88	2.40
Composition of { Solids other than Fat the Milk. { Total Solids	...	...	...	...	...	8.74	8.84	8.62	8.14
						12.40	12.74	12.50	10.54
Actual weight of Fat, in lbs. ...	...	...	...	...	...	1.07	.98	.92	.47
Calculation of Points multiply by 20...	...	...	...	...	...	21.4	19.6	18.4	9.1
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	2.56	2.22	2.03	1.60
Calculation of Points multiply by 4 ...	...	...	...	...	...	10.24	8.88	8.12	6.40
Points { For time since Calving ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat ... (lbs. × 4) ...	...	...	...	...	...	.3		.6	
						77.9		69.7	
						59.4		42.2	
						27.2		23.8	
Total ...	...	...	...	...	...	164.8		136.3	
Deductions ...	...	...	...	...	...	---		20.0	
Points gained...	...	...	...	...	...	164.8		116.3	
Remarks and Awards ...	...	...	...	...	...	2nd Prize.		Highly Commended.	

CLASS 37. — SHE GOATS, QUALIFIED AS "STAR OR 'Q' STAR MILKERS."

Number ... Name ...	...	...	...	...	541 Riding Cherry.	550 Whiffl of Weston's.	563 Gibbet's.	572 Blossom.
Born ...	...	...	...	...	Mar. 9, 1919.	Feb. 7, 1921.	1919.	Mar. 14, 1917.
Number of Kids ...	...	...	...	...	June 8,	April 4,	Mar. 10,	May 8,
Last Kiddled ...	...	...	...	...	136	201	226	167
Days since Kidding ...	...	...	...	...	108	147	146	119
Live weight, in lbs. ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day ...	...	...	...	...	4-1 3-1	3-7 3-3	4-4 2-7	3-7 2-8
Weight of Milk, 2nd day ...	...	...	...	...	4-5 3-2	4-6 3-3	4-5 3-2	4-0 2-7
Total ...	...	...	...	...	8-6 6-3	8-3 6-6	8-9 5-9	7-7 5-5
Average ...	...	...	...	...	4-3 3-2	4-1 3-3	4-4 3-0	3-8 2-8
Percentage { Fat ...	...	...	...	...	4-41 4-59	3-56 4-87	4-78 4-02	3-52 3-87
Composition of { Solids other than Fat	...	...	...	...	8-99 9-03	9-46 9-33	8-80 8-74	8-76 8-83
the Milk. { Total Solids	...	...	...	...	13-40 13-02	13-02 14-20	13-58 12-76	12-28 12-70
Actual weight of Fat, in lbs. ...	...	...	...	...	1-00 1-47	1-46 1-61	2-10 1-20	1-34 1-09
Calculation of Points multiply by 20 ...	...	...	...	...	3-8 2-94	2-02 3-22	4-2 2-4	2-68 2-18
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	3-86 2-90	3-88 3-07	3-87 2-62	3-33 2-47
Calculation of Points multiply by 4 ...	...	...	...	...	1-544 1-16	1-552 1-228	1-548 1-048	1-332 1-088
Points { For time since Kidding For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	1-6	2-7	3-1	2-1
	...	...	...	...	7-5	7-4	7-4	6-6
	...	...	...	...	6-7	6-1	6-6	4-9
	...	...	...	...	2-7	2-8	2-6	2-3
Total ...	...	...	...	...	18-5	19-0	19-7	15-9
Deductions ...	...	...	...	...	—	—	—	—
Points gained ...	...	...	...	...	18-5	19-0	19-7	15-9
Remarks and Awards ...	...	...	...	...	Highly Commended. Straker Cup.	Reserve and Highly Commended.	1st Prize. Reserve for Trenchella Solene Cup.	15-9

CLASS 37.—SHE GOATS, QUALIFIED AS "STAR OR 'Q' STAR MILKERS."

Number ... Name ...	...	...	...	...	...	573 Welfare of Weston's	575 Problem of Bashley.
Born ...	...	...	...	...	...	Jan. 20, 1921.	March 7, 1918.
Number of Kids ...	...	...	...	...	...	April 4, 201	April 7, 198
Last Kiddled ...	...	...	...	...	...	164	167
Days since Kidding ...	...	...	...	...	...	Morn Even	Morn Even
Live weight, in lbs. ...	...	...	...	...	...	5-0 3-7	5-7 4-3
Weight of Milk, 1st day ...	...	...	...	...	...	5-0 4-0	5-7 4-6
Weight of Milk, 2nd day ...	...	...	...	...	...	10-0 7-7	11-4 8-9
Total ...	...	...	...	...	...	5-0 3-9	5-7 4-5
Average ...	...	...	...	...	...	4-20 4-28	5-42 5-23
Percentage { Fat ...	...	...	...	...	...	9-70 9-84	9-62 9-51
Composition of { Solids other than Fat	...	...	...	...	...	13-90 14-12	15-04 14-74
the Milk. { Total Solids	...	...	...	...	...	-210 -167	-308 -237
Actual weight of Fat, in lbs. ...	...	...	...	...	...	4-2 3-34	6-16 4-74
Calculation of Points multiply by 20...	...	...	...	...	...	-485 -384	-548 -430
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	1-940 1-536	2-192 1-72
Calculation of Points multiply by 4 ...	...	...	...	...	...	2-7	2-6
Points { For time since Kidding ...	...	...	...	...	...	8-9	10-2
	...	...	...	...	...	7-5	10-9
	...	...	...	...	...	3-5	3-9
	...	...	...	...	...	22-6	27-6
Total ...	...	...	...	...	...	—	—
Deductions ...	...	...	...	...	...	22-6	27-6
Points gained...	...	...	...	...	...	—	—
Remarks and Awards ...	...	...	...	...	...	2nd Prize, Reserve for Bashley's Bucklet Goats Cup. Reserve for Dewar Trophy.	1st Prize, Reserve for Bashley's Goats' Cup. Tremble's Selene Cup. Dewar Trophy.

CLASS 38.—SHE GOATS (NOT ELIGIBLE FOR CLASS 37)—Continued.

Number ...	...	...	...	...	...	571
Name ...	...	...	...	...	...	Ruthie Topsy 2nd.
Born ...	...	...	...	...	...	April 19, 1920.
Number of Kids ...	...	...	...	...	...	April 20,
Last Kidled ...	...	...	...	...	...	185
Days since Kidling ...	...	...	...	...	...	133
Live weight, in lbs. ...	...	...	...	...	...	Morn Even
Weight of Milk, 1st day	...	...	...	...	...	4.2 3.3
Weight of Milk, 2nd day	...	...	...	...	...	4.5 3.3
Total ...	...	...	...	...	...	8.7 6.6
Average ...	...	...	...	...	...	4.3 3.3
Percentage of Fat ...	...	...	...	...	...	3.39 5.19
Composition of Solids other than Fat the Milk. { Total Solids ...	...	...	...	...	...	9.31 9.37
Actual weight of Fat, in lbs. ...	...	...	...	...	...	12.70 14.56
Calculation of Points multiply by 20 ...	...	...	...	...	...	.146 .172
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	...	2.92 3.44
Calculation of Points multiply by 4 ...	...	...	...	...	...	.401 .310
Points { For time since Kidling ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	1.604 1.24
Total ...	...	...	...	...	...	2.4
Deductions ...	...	...	...	...	...	7.6
Points gained ...	...	...	...	...	...	6.4
...	...	...	...	...	...	2.8
...	...	...	...	...	...	19.2
...	—
...	...	...	...	...	...	19.2
Remarks and Awards ...	...	...	...	...	...	3rd Prize.

THE DAIRY SHOW BUTTER TESTS OF 1923.

By R. H. EVANS, B.Sc.

The Prizes in the Butter Tests were awarded according to the following scale of points :

- One point for every ounce of butter : one point for every completed 10 days since calving (calculated to the first day of the Show), deducting the first 40 days. Maximum allowance for period of lactation, 12 points.
- ☐

Fraction of ounces of butter, and incomplete periods of less than 10 days, to be worked out in decimals, and added to the total points.

In the case of cows obtaining the same number of points, the prize to be awarded to the cow that has been the longest time in milk.

A Certificate giving the last date of calving (which must be before 9 a.m. on October 9th), must be received by the Secretary, not later than 12 midnight on October 13th).

No prize will be given to animals in the Butter Tests which do not come up to the following standard :—

Breed.	Cows under 5 years. Points.	Cows 5 years and over. Points.
Pedigree Shorthorns	30	34
Non-Pedigree Shorthorns	30	34
British Friesians	30	34
Lincoln Red Shorthorns	30	34
Jerseys	30	35
Guernseys	27	30
Ayrshires	27	30
Red Polls	30	34
South Devons	30	34
Kerries	26	29
Dexters	26	29
Devons	27	30
Welsh	27	30
Blue Albions	30	34

Certificates of Merit and Highly Commended Cards will be given to animals, other than Prize Winners, that reach the above standard.

The total number of entries for the 1923 Butter Tests constituted a record, at the London Dairy Show, and were as follows :—

Pedigree Shorthorns	...	...	...	...	...	...	47
Non-Pedigree Shorthorns	...	...	...	...	...	...	24
Lincolnshire Reds	...	...	...	...	...	...	13
British Friesians	...	...	...	...	...	...	35
South Devons	...	...	...	...	...	...	5
Devons	...	...	...	...	...	...	7
Red Polls	...	...	...	...	...	...	25
Blue Albions	...	...	...	...	...	...	10
Ayrshires	...	...	...	...	...	...	30
Guernseys	...	...	...	...	...	...	19
Jerseys	...	...	...	...	...	...	43
Kerry	...	...	...	...	...	...	13
Dexters	...	...	...	...	...	...	11
							<hr/>
							282
							<hr/>

Of this number only 143 animals were actually tested, the large number of absentees being due to the outbreak of Foot and Mouth Disease prevalent in many parts of the country. One new breed of cattle, viz., the Blue Albions, competed for the first time at the 1923 Dairy Show.

Of 43 Shorthorns tested, 1 cow yielded over 4 lbs. of butter; 3 yielded over 3 lbs.; 4 yielded over 2½ lbs.; 10 over 2 lbs.; 12 over 1½ lbs.; 9 over 1 lb.; and 4 under 1 lb. in 24 hours, the average yield for the 43 animals in this class being 1 lb. 14¼ ozs., with a butter ratio of 1 to 24.96 lbs. milk.

The outstanding feature in this class is the performance of Major Yates' cow "Claras Beauty," a pedigree Shorthorn. This animal yielded 4 lbs. 0½ ozs. butter in 24 hours. Her milk yield during the same period amounted to 74 lbs. 11 ozs. and the butter ratio works out at 1 to 18.52.

It would be interesting if in such cases periodical tests could be carried out to ascertain whether the cow can maintain a proportional high yield of butter fat throughout the lactation period or whether the performance at the Show was due to certain circumstances obtaining at the time.

The next best yield in this class was that of Mr. A. B. Coxton's "Spot." This animal yielded 66 lbs. 10 ozs. milk in 24 hours, from which 3 lbs. 4½ ozs. butter was obtained, with a butter ratio of 1 to 20.30.

Mr. T. H. Robinson's "Kirklevington 54th" yielded 3 lbs. 3½ ozs. butter from 42 lbs. 11 ozs. milk. The butter ratio in the case of this animal worked out at 1 to 13.24, an abnormally low figure for a Shorthorn.

Mr. John Evens' "Burton Ruby 15th" yielded 3 lbs. 2 ozs. The milk yield in this case was 63 lbs. 11 ozs., and the butter ratio 1 to 20.38.

The performance of the Friesians showed an improvement on that of last year. The average yield of butter amounted to 1 lb. 11½ ozs., as compared with 1 lb. 10 ozs. in 1922; the average butter ratio was 1 to 32.22, as compared with 1 to 35.32, and the average points were 31.76 in 1923, as compared with 26.86 in 1922. The First Prize was awarded to Mr. Holt Thomas's "Kingswood Ceres Myrtle," an animal which had been 136 days in milk. Her yield of butter was 2 lbs. 5½ ozs., and her butter ratio 1 to 24.72.

Two other animals belonging to Mr. Holt Thomas, viz., "Kingswood Myrtle Leaf," and "Blackmore Ena 2nd," carried the second and third prizes respectively.

The Red Poll Class also showed a marked improvement on the 1922 results. The average yield of butter for this class was 1 lb. 9¾ ozs., as compared with 1 lb. 3½ ozs. in 1922, the average butter ratio was 1 to 26.67, as compared with 1 to 34.09, and the average points 28.00, as compared with 21.76.

The premier prize in this class was awarded to Mr. T. Scrymgeour's "Sotterley Winsome," a cow that had been 167 days in milk, her butter yield being 2 lbs. 2½ ozs.

The Ayrshires yielded on an average 1 lb. 14 ozs. of butter, as compared with 1 lb. 10¼ ozs. in 1922, with an average butter ratio of 1 to 23.88, as compared with 1 to 31.92. The average number of points, however, was only 30.35, as compared with 32.18 in 1922.

It should be noted that out of 16 animals tested in this class, 11 were Heifers, and the average results are very creditable.

Ten Guernseys were tested. This class also showed an improvement on the 1922 performance. The average yield of butter amounted to 1 lb. 10¾ ozs., as compared with 1 lb. 8¾ ozs. at the previous Show; the butter ratio was 1 to 22.89, as compared with 1 to 21.75; and the average points 30.13, as compared with 27.31.

In the Jersey class 25 animals were tested. This class also showed a slight improvement on the 1922 results. The first prize was awarded to Mr. Grosvenor Berry's "Negundo," an animal that had been in milk 220 days, with a yield of 2 lbs. 5 ozs. of butter. Mr. Berry's "Golden Raspberry," with a yield of 2 lbs. 1 oz. carried the second prize, and Mr. R. Bruce Ward's "Evergreen" took the third prize, the yield being 2 lbs. 1 oz.

Three South Devons competed, Mr. Walter Hunt's "Netton Lily" being awarded the prize in this class, with a yield of 2 lbs. 2 ozs.

Five Devons were tested, Mr. N. D. Lupton's "Compton Handsome" and "Wynford Molly" gaining the first and second prizes respectively.

The Kerry Class was above the average. Captain Zambra's "Flora of Carton" and "Wadlands Butter-milker" being awarded the first and second prizes respectively, while Lt.-Col. Grant Morden's "Jill of Carton" carried the third honour.

In the Dexter Class, Mr. Alfred King's "La Mancha Madeline" and "Braishfield Black Tulip" carried the first and second prizes respectively.

My best thanks are due to my three colleagues, Mr. J. W. Stafford, and Messrs. T. H. Hammond and L. J. Craufurd (representing the Jersey Cattle Society), who rendered me valuable assistance in the carrying out of the test.

The following table gives the average results of the tests for all breeds competing:—

Year.			Total No. of Cows.	Average weight of 24 hours' Milk.	Average Yield of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs.	lbs. ozs.		
1909	...	...	61	42	1 12 $\frac{3}{4}$	23.51	33.30
1910	...	...	62	44	1 12 $\frac{1}{2}$	25.03	32.50
1911	...	...	55	43 $\frac{1}{2}$	1 11	25.87	30.90
1912	...	...	54	49 $\frac{1}{2}$	1 14 $\frac{3}{4}$	25.82	33.08
1913	...	...	62	42	1 9 $\frac{1}{2}$	26.05	29.26
1914	...	...	45	45 $\frac{1}{2}$	1 12 $\frac{1}{4}$	25.67	31.69
1915	...	...	45	46 $\frac{1}{4}$	1 9	29.83	28.49
1919	...	...	94	37 $\frac{1}{2}$	1 9 $\frac{3}{4}$	23.43	28.61
1920	...	...	111	39	1 9 $\frac{1}{4}$	24.21	28.25
1921	...	...	173	39 $\frac{3}{4}$	1 6 $\frac{1}{2}$	25.35	27.68
1922	...	...	187	42 $\frac{1}{2}$	1 8 $\frac{1}{4}$	27.99	26.31
1923	...	...	143	41 $\frac{3}{4}$	1 11 $\frac{1}{2}$	24.03	32.23

TABLE I.—NUMBER OF CATTLE TESTED SINCE 1897.

Breed	1887	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Shorthorns	9	23	21	22	15	31	18	14	17	22	26	26	19	22	26	30	26	20	20	24	30	63	39	31			
Lincoln Reds	—	—	—	—	—	—	—	—	—	—	7	9	8	8	6	6	5	4	2	4	4	7	7	9			
Jerseys	14	17	15	29	25	30	20	12	18	13	13	16	22	18	18	7	18	9	10	22	21	24	27	25			
Guernseys	3	5	4	7	8	1	5	3	3	2	2	2	2	2	1	2	6	5	7	16	14	19	15	10			
Red Polls...	7	4	9	7	2	6	5	4	11	12	11	3	4	4	1	1	—	—	1	11	12	17	23	13			
Ayrshires ...	3	1	2	—	1	1	—	1	3	2	—	4	—	1	—	4	—	—	—	—	—	2	20	16			
Sth. Devons	—	—	—	—	—	—	2	2	3	5	—	—	4	7	2	4	2	6	3	—	—	5	5	3			
Dutch	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Kerries and Dexters	—	1	2	—	1	2	—	2	1	2	2	5	2	—	1	—	5	—	—	10	13	20	16	15			
Welsh Black	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—			
Cross-breds	4	1	6	2	2	11	8	6	8	10	—	—	—	—	—	—	—	1	2	2	15	10	24	13			
British Friesians	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Devons ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	2	6	7	5			
	41	53	60	68	54	82	59	44	64	68	61	65	61	62	55	54	62	45	45	94	111	173	187	143			

TABLE II.—NUMBER OF CATTLE OF THE VARIOUS BREEDS TESTED SINCE 1895, WITH THEIR AVERAGE PERIOD OF LACTATION, WEIGHT OF BUTTER, BUTTER RATIOS, AND POINTS.

Year.	No.	Breed.	Average No. of Days in Milk.	Average Weight of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs. ozs.	lbs.	
From 1895 to 1900	106	Shorthorns ...	50½	1 11	28.81	—
1901	15	" ...	44	2 0½	26.69	33.69
1902	31	" ...	50	1 11½	27.38	23.89
1903	18	" ...	41	1 11	38.59	28.44
1904	14	" ...	41½	1 10	29.31	27.47
1905	17	" ...	53	1 13½	27.65	31.25
1906	22	" ...	58	1 6¾	32.87	25.08
1907	26	" ...	62	1 11¾	29.23	30.24
1908	35	" ...	49	1 11	29.39	28.05
1909	19	" ...	54	1 14	27.25	32.31
1910	22	" ...	43	1 13½	27.53	31.39
1911	26	" ...	39	1 12½	28.42	29.28
1912	30	" ...	44	2 0½	26.58	33.75
1913	26	" ...	38	1 10½	31.45	27.54
1914	20	" ...	40	1 13½	27.61	29.50
1915	20	" ...	44	1 10½	33.68	26.99
1919	24	" ...	34	1 13½	24.35	28.82
1920	30	" ...	34	1 11½	25.43	27.91
1921	63	" ...	29	1 8	30.25	24.20
1922	39	" ...	30	1 9	30.75	25.68
1923	34	" ...	57	1 14½	26.01	32.59
1907	7	Lincoln Reds	57	1 13½	28.31	31.91
1908	9	" ...	61	1 12	28.00	30.60
1909	8	" ...	44	1 14¾	24.81	32.09
1910	8	" ...	79	1 10¾	27.15	31.39
1911	6	" ...	78	1 11	27.03	30.97
1912	6	" ...	36	1 14½	26.72	30.92
1913	5	" ...	44	1 13¾	27.78	29.72
1914	4	" ...	49	1 9¾	30.21	27.37
1915	2	" ...	106	1 10¼	52.81	32.11
1919	4	" ...	58	1 13¾	29.20	32.32
1920	4	" ...	59	1 5½	31.61	23.90
1921	7	" ...	64	1 13½	27.13	31.40
1922	7	" ...	31½	2 3½	24.82	35.89
1923	9	" ...	58	1 14¾	26.37	32.73
From 1895 to 1900	126	Jerseys ...	99	1 10¼	19.15	—
1901	25	" ...	141	1 9½	17.80	34.44
1902	30	" ...	124	1 10	18.46	33.19
1903	20	" ...	141	1 11	18.12	36.13
1904	12	" ...	117	1 13½	19.62	36.79
1905	18	" ...	134	1 10¾	19.48	35.51
1906	13	" ...	119	1 10¼	20.89	33.49
1907	13	" ...	111	1 11	19.71	34.49
1908	16	" ...	115	1 7¼	22.35	30.00

TABLE II.—NUMBER OF CATTLE OF THE VARIOUS BREEDS TESTED SINCE 1895, WITH THEIR AVERAGE PERIOD OF LACTATION, WEIGHT OF BUTTER, BUTTER RATIOS, AND POINTS—*Continued.*

Year.	No.	Breed.	Average No. of Days in Milk.	Average Weight of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs. ozs.	lbs.	
1909	22	Jerseys ...	116	1 13 $\frac{1}{2}$	18-36	37-12
1910	18	" ...	123	1 13 $\frac{1}{2}$	18-43	37-05
1911	18	" ...	116	1 11 $\frac{1}{2}$	19-98	34-11
1912	7	" ...	143	2 1	18-26	40-77
1913	18	" ...	136	1 10 $\frac{1}{2}$	19-24	35-85
1914	9	" ...	142	1 15	18-77	40-12
1915	10	" ...	123	1 11 $\frac{1}{2}$	19-00	35-56
1919	22	" ...	111	1 11 $\frac{1}{2}$	18-76	33-59
1920	21	" ...	106	1 11	18-85	32-74
1921	24	" ...	127	1 9 $\frac{1}{2}$	18-56	32-29
1922	27	" ...	105	1 9 $\frac{1}{2}$	19-82	31-99
1923	25	" ...	135	1 10	18-49	35-31
From 1895 to 1900	23	Guernseys ...	71 $\frac{1}{2}$	1 9 $\frac{1}{2}$	21-86	—
1901	8	" ...	81	1 8 $\frac{3}{4}$	21-43	29-51
1902	1	" ...	17	1 3 $\frac{3}{4}$	21-46	19-75
1903	5	" ...	52	1 1	27-77	18-93
1904	3	" ...	98 $\frac{1}{2}$	1 10	20-65	31-91
1905	3	" ...	165 $\frac{5}{8}$	1 6 $\frac{3}{4}$	19-66	31-78
1906	2	" ...	138	1 3 $\frac{1}{2}$	27-00	28-45
1907	2	" ...	82	1 12 $\frac{1}{2}$	18-90	33-48
1908	2	" ...	142	1 13 $\frac{1}{2}$	19-47	37-90
1909	2	" ...	66	1 9 $\frac{1}{2}$	21-13	28-27
1910	2	" ...	57	1 3 $\frac{3}{4}$	26-80	21-93
1911	1	" ...	181	0 14	39-28	26-00
1912	2	" ...	53	1 2 $\frac{1}{2}$	24-32	20-55
1913	6	" ...	139	1 6 $\frac{1}{2}$	21-94	30-66
1914	5	" ...	110	1 6 $\frac{1}{4}$	21-88	29-53
1915	7	" ...	107	1 6 $\frac{1}{2}$	22-30	30-09
1919	16	" ...	80	1 7 $\frac{1}{4}$	19-76	27-16
1920	14	" ...	82	1 8 $\frac{1}{4}$	21-22	28-53
1921	19	" ...	82	1 8 $\frac{1}{2}$	20-45	27-47
1922	15	" ...	52	1 8 $\frac{3}{4}$	21-95	27-31
1923	10	" ...	66	1 10 $\frac{1}{2}$	22-89	30-13
From 1895 to 1900	30	Red Polls ...	60 $\frac{1}{2}$	1 4 $\frac{1}{2}$	30-29	—
1901	2	" ...	80	1 8 $\frac{5}{8}$	25-50	28-77
1902	6	" ...	83	1 6 $\frac{5}{8}$	26-84	26-92
1903	5	" ...	124	1 0	39-60	21-39
1904	4	" ...	115 $\frac{1}{2}$	1 5 $\frac{1}{2}$	30-34	29-06
1905	11	" ...	74 $\frac{1}{2}$	1 3 $\frac{1}{2}$	28-78	22-76
1906	12	" ...	76	0 15	39-15	18-81
1907	11	" ...	99	1 2 $\frac{1}{4}$	33-21	23-96
1908	3	" ...	92	1 1	35-00	22-16
1909	4	" ...	86	1 4 $\frac{1}{2}$	32-73	25-37
1910	4	" ...	78	1 4 $\frac{1}{2}$	30-81	24-35

TABLE II.—NUMBER OF CATTLE OF THE VARIOUS BREEDS TESTED SINCE 1895, WITH THEIR AVERAGE PERIOD OF LACTATION, WEIGHT OF BUTTER, BUTTER RATIOS, AND POINTS—*Continued.*

Year.	No.	Breed.	Average No. of Days in Milk.	Average Weight of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs. ozs.	lbs.	
1911	1	Red Polls ...	76	0 15	36.60	18.60
1912	1	" ...	26	1 0	43.80	16.00
1915	1	" ...	31	—	—	—
1919	11	" ...	49	1 8 $\frac{1}{4}$	30.03	26.02
1920	12	" ...	61	1 5 $\frac{1}{2}$	31.46	23.66
1921	17	" ...	68	1 9 $\frac{1}{2}$	24.73	27.52
1922	23	" ...	59	1 3 $\frac{1}{2}$	34.09	21.75
1923	13	" ...	57	1 9 $\frac{3}{4}$	26.67	28.00
From 1895 to 1900	8	Ayrshires ...	52	1 13 $\frac{1}{4}$	26.35	—
1901	1	" ...	125	1 7 $\frac{1}{2}$	27.65	32.10
1902	1	" ...	33	1 3 $\frac{1}{2}$	18.00	19.50
1904	1	" ...	116	0 12 $\frac{1}{2}$	35.20	20.10
1905	3	" ...	77	1 2 $\frac{1}{2}$	28.07	22.88
1906	2	" ...	23	1 11 $\frac{3}{4}$	25.51	27.70
1908	4	" ...	75	1 2	35.19	21.00
1910	1	" ...	88	1 15	25.93	35.80
1912	4	" ...	71	1 5 $\frac{1}{2}$	32.52	24.65
1921	2	" ...	39	2 5	20.15	37.20
1922	20	" ...	32 $\frac{1}{2}$	1 10 $\frac{1}{4}$	31.92	32.18
1923	16	" ...	29	1 14	23.88	30.35
1909	4	South Devons	105	1 13 $\frac{3}{4}$	24.77	33.66
1910	7	" ...	91	1 11 $\frac{1}{2}$	29.33	32.87
1911	2	" ...	144	1 5	38.98	31.52
1912	4	" ...	90	1 15 $\frac{1}{2}$	26.51	36.74
1913	2	" ...	62	1 8 $\frac{1}{4}$	30.96	26.50
1914	6	" ...	78	1 12	28.85	32.11
1915	3	" ...	42	1 1 $\frac{1}{2}$	40.50	17.88
1921	5	" ...	77	1 14 $\frac{1}{4}$	22.06	34.42
1922	5	" ...	55	1 13	27.04	29.25
1923	3	" ...	36	2 3 $\frac{1}{4}$	21.43	35.76
From 1895 to 1900	3	D'xt'rs Kerries	117	0 14 $\frac{3}{4}$	40.80	—
1901	1	" ...	83	1 6 $\frac{1}{2}$	21.17	26.55
1902	2	" ...	46	1 7 $\frac{3}{8}$	21.28	23.49
1904	2	" ...	72	0 14 $\frac{3}{4}$	21.31	18.45
1905	1	" ...	149	1 1 $\frac{1}{2}$	23.47	28.15
1906	2	" ...	33	1 13	22.40	29.10
1907	2	" ...	65	1 11 $\frac{1}{2}$	21.06	29.70
1908	5	" ...	124	1 6	24.47	29.13
1909	2	Kerries ...	75	1 6	20.86	25.65
1911	1	" ...	162	1 3 $\frac{1}{2}$	28.51	31.50

TABLE II.—NUMBER OF CATTLE OF THE VARIOUS BREEDS TESTED SINCE 1895, WITH THEIR AVERAGE PERIOD OF LACTATION, WEIGHT OF BUTTER, BUTTER RATIOS, AND POINTS—*Continued.*

Year.	No.	Breed.	Average No. of Days in Milk.	Average Weight of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs. ozs.	lbs.	
1913	5	Kerries ...	43	1 3	25.98	19.70
1919	4	" ...	32	1 2½	27.66	18.71
1920	8	" ...	63	1 7	22.81	25.77
1921	17	" ...	76	1 3½	23.16	22.43
1922	13	" ...	51	1 1¼	29.33	19.34
1923	7	" ...	156	1 8½	24.60	29.74
1919	6	Dexters ...	129	0 15½	23.48	23.84
1920	5	" ...	112	0 12½	21.78	19.21
1921	3	" ...	153	0 11	24.33	22.30
1922	3	" ...	143	0 13½	25.82	21.73
1923	8	" ...	150	0 13¾	25.20	23.56
1914	1	B't'h Friesians	102	1 3½	44.87	25.70
1915	2	" ...	40	1 12	38.51	29.20
1919	2	" ...	28	1 10½	36.05	26.50
1920	15	" ...	50	1 13	29.59	31.17
1921	10	" ...	85	2 3	28.26	39.00
1922	24	" ...	57	1 10	35.32	26.86
1923	13	" ...	65	1 11¼	32.22	31.76
1919	5	Devons ...	60	1 9¼	24.47	27.57
1920	2	" ...	25	1 15½	19.32	31.55
1921	6	" ...	48	1 15	21.92	32.60
1922	7	" ...	47½	1 10¾	27.00	28.53
1923	5	" ...	41	1 14½	23.18	31.29
1922	4	Welsh ...	52	1 13½	24.23	30.45

TABLE III.—AVERAGE YIELD OF BUTTER OF THE DIFFERENT BREEDS AT DIFFERENT PERIODS.

Year.	Breed.	No. of Cows.	Days in Milk, 50.	No. of Cows.	Days in Milk, 100.	No. of Cows.	Days in Milk, 135.	No. of Cows.	Days in Milk, 180.
1895 to			lbs. ozs.		lbs. ozs.		lbs. ozs.		lbs. ozs.
1900	Shorthorns	19	1 12 $\frac{1}{2}$	6	1 7 $\frac{1}{2}$	2	1 4 $\frac{3}{4}$	8	1 1 $\frac{1}{2}$
1901	"	2	1 8	—	—	1	2 6	—	—
1902	"	6	1 10 $\frac{1}{2}$	—	—	1	1 11	—	—
1903	"	3	1 7	—	—	1	1 6 $\frac{1}{4}$	—	—
1904	"	3	1 10 $\frac{1}{2}$	1	1 14 $\frac{1}{2}$	—	—	—	—
1905	"	2	1 1	1	2 0 $\frac{1}{2}$	2	1 7 $\frac{3}{4}$	—	—
1906	"	11	1 8 $\frac{1}{2}$	3	1 3 $\frac{1}{2}$	—	—	—	—
1907	"	11	1 9 $\frac{1}{2}$	2	1 9 $\frac{3}{4}$	1	0 15 $\frac{3}{4}$	—	—
1908	"	11	1 11 $\frac{1}{2}$	—	—	2	1 12	—	—
1909	"	11	2 0 $\frac{1}{2}$	5	1 11 $\frac{1}{2}$	3	1 8 $\frac{1}{2}$	—	—
1910	"	16	1 14 $\frac{1}{4}$	5	2 1	1	1 3 $\frac{1}{4}$	—	—
1911	"	20	1 13	6	1 9 $\frac{1}{2}$	—	—	—	—
1912	"	23	2 2 $\frac{3}{4}$	6	1 8 $\frac{3}{4}$	1	1 14	—	—
1913	"	20	1 11	5	1 8 $\frac{1}{4}$	1	1 5	—	—
1914	"	17	1 15	1	0 12	2	1 7 $\frac{1}{2}$	—	—
1915	"	17	1 11 $\frac{1}{4}$	2	1 5	—	—	—	—
1919	"	20	1 13 $\frac{1}{2}$	4	1 12 $\frac{1}{4}$	—	—	—	—
1920	"	25	1 12 $\frac{1}{4}$	5	1 6 $\frac{1}{2}$	—	—	—	—
1921	"	56	1 8 $\frac{1}{2}$	5	1 5 $\frac{1}{2}$	—	—	—	—
1922	"	33	1 9	5	1 4 $\frac{3}{4}$	1	1 $\frac{1}{2}$	—	—
1923	"	24	1 15 $\frac{1}{2}$	4	2 0 $\frac{1}{2}$	2	1 13	4	1 5
1907	Lincoln Reds	3	1 12	1	1 11	—	—	—	—
1909	"	6	2 1	1	1 9 $\frac{3}{4}$	1	1 7	—	—
1910	"	4	1 10 $\frac{1}{2}$	—	—	3	1 10 $\frac{1}{2}$	1	1 13 $\frac{1}{2}$
1911	"	4	1 10 $\frac{1}{2}$	—	—	—	—	2	1 12
1912	"	5	1 15 $\frac{3}{4}$	1	1 8 $\frac{1}{2}$	—	—	—	—
1913	"	5	1 13 $\frac{1}{4}$	—	—	—	—	—	—
1914	"	3	1 9	1	1 12	—	—	—	—
1915	"	—	—	1	1 13 $\frac{3}{4}$	—	—	1	1 7
1919	"	2	1 14 $\frac{1}{4}$	1	2 3 $\frac{1}{2}$	1	1 6 $\frac{1}{2}$	—	—
1920	"	2	1 8 $\frac{1}{2}$	2	1 2 $\frac{1}{2}$	—	—	—	—
1921	"	4	1 14 $\frac{1}{2}$	1	1 10 $\frac{1}{2}$	2	1 11 $\frac{1}{2}$	—	—
1922	"	7	2 3 $\frac{1}{2}$	—	—	—	—	—	—
1923	"	5	1 12 $\frac{3}{4}$	2	1 10	—	—	2	1 8
1895 to									
1900	Jerseys	23	1 10 $\frac{1}{4}$	15	1 8 $\frac{1}{2}$	11	1 8 $\frac{1}{6}$	31	1 10 $\frac{1}{2}$
1901	"	1	1 12	8	1 7 $\frac{1}{4}$	6	1 9	12	1 10 $\frac{1}{2}$
1902	"	4	1 9 $\frac{3}{8}$	3	1 8 $\frac{3}{8}$	2	1 14	9	1 11
1903	"	4	1 9 $\frac{1}{8}$	5	1 15	9	1 9 $\frac{2}{3}$	2	1 9 $\frac{3}{4}$
1904	"	2	1 10 $\frac{1}{8}$	3	2 2 $\frac{1}{2}$	4	2 0 $\frac{1}{10}$	1	1 13 $\frac{1}{2}$
1905	"	3	1 8 $\frac{1}{2}$	4	1 15 $\frac{1}{2}$	8	1 9 $\frac{1}{4}$	2	1 8 $\frac{1}{2}$
1906	"	5	1 10 $\frac{3}{4}$	3	1 3 $\frac{3}{4}$	4	1 15 $\frac{1}{4}$	1	1 5 $\frac{1}{2}$
1907	"	6	1 13 $\frac{1}{2}$	2	1 7 $\frac{1}{2}$	3	1 13	1	1 4 $\frac{3}{4}$
1908	"	4	1 14 $\frac{1}{2}$	3	1 10	4	1 1	2	1 2
1909	"	3	1 3	4	2 2 $\frac{1}{2}$	6	1 14 $\frac{3}{4}$	9	1 12
1910	"	2	1 10 $\frac{1}{2}$	5	1 13 $\frac{1}{2}$	2	1 15 $\frac{1}{2}$	7	1 13 $\frac{1}{2}$
1911	"	3	1 0 $\frac{1}{2}$	6	1 11	1	2 5 $\frac{1}{2}$	4	1 12 $\frac{1}{2}$

TABLE III.—AVERAGE YIELD OF BUTTER OF THE DIFFERENT BREEDS AT DIFFERENT PERIODS—Continued.

Year.	Breed.	No. of Cows.	Days in Milk, 50.	No. of Cows.	Days in Milk, 100.	No. of Cows.	Days in Milk, 135.	No. of Cows.	Days in Milk, 190.
			lbs. ozs.		lbs. ozs.		lbs. ozs.		lbs. ozs.
1912	Jerseys	—	—	2	1 8 $\frac{3}{4}$	2	2 1	—	—
1913	"	1	1 5 $\frac{1}{4}$	5	1 11	1	1 12	8	1 7
1914	"	1	1 8	1	2 1 $\frac{1}{2}$	1	1 10	4	2 1
1915	"	2	1 9	1	1 8	1	2 0 $\frac{3}{4}$	5	1 13 $\frac{1}{4}$
1919	"	3	1 15 $\frac{1}{4}$	8	1 7 $\frac{1}{4}$	4	1 12 $\frac{3}{4}$	4	1 11 $\frac{1}{4}$
1920	"	6	1 13 $\frac{1}{2}$	4	1 11 $\frac{1}{4}$	3	1 14	6	1 5 $\frac{1}{2}$
1921	"	1	1 2	8	1 8 $\frac{1}{2}$	4	1 15	8	1 7 $\frac{1}{2}$
1922	"	4	1 12 $\frac{1}{2}$	8	1 11 $\frac{1}{2}$	7	1 8 $\frac{1}{4}$	8	1 6 $\frac{3}{4}$
1923	"	1	1 9 $\frac{1}{2}$	3	1 11 $\frac{1}{4}$	8	1 9 $\frac{1}{4}$	13	1 10 $\frac{3}{4}$
1895 to									
1900	Guernseys	3	1 7 $\frac{1}{2}$	4	1 7 $\frac{1}{2}$	3	1 4 $\frac{5}{8}$	1	1 8
1901	"	1	1 15 $\frac{1}{4}$	2	1 5 $\frac{3}{4}$	—	—	2	1 8 $\frac{3}{8}$
1903	"	2	0 15 $\frac{1}{2}$	—	—	—	—	—	—
1904	"	2	1 6 $\frac{3}{4}$	—	—	1	2 0 $\frac{1}{2}$	—	—
1905	"	1	1 10 $\frac{1}{2}$	—	—	1	1 12 $\frac{1}{4}$	1	0 13 $\frac{1}{2}$
1906	"	—	—	1	1 1	1	1 5 $\frac{1}{2}$	—	—
1907	"	—	—	—	—	—	—	1	1 14
1908	"	1	1 13	—	—	—	—	1	1 14
1909	"	1	1 11	1	1 8 $\frac{1}{4}$	—	—	—	—
1910	"	1	1 3 $\frac{1}{2}$	1	1 3 $\frac{1}{4}$	—	—	—	—
1911	"	—	—	—	—	—	—	1	0 14
1912	"	1	1 3	1	1 2	—	—	—	—
1913	"	1	1 8	1	1 6 $\frac{3}{4}$	1	1 12	—	—
1914	"	2	1 11	—	—	—	—	3	1 3 $\frac{3}{4}$
1915	"	1	0 14 $\frac{1}{4}$	2	1 14	2	1 7 $\frac{3}{4}$	2	1 5 $\frac{1}{2}$
1919	"	8	1 8 $\frac{1}{4}$	2	1 11	2	1 2 $\frac{1}{4}$	4	1 7 $\frac{3}{4}$
1920	"	4	1 10	5	1 11 $\frac{1}{4}$	3	1 2 $\frac{1}{4}$	1	1 2
1921	"	7	1 12	5	1 5	2	1 7 $\frac{1}{4}$	5	1 7
1922	"	9	1 8 $\frac{3}{4}$	3	1 12	1	1 5 $\frac{1}{2}$	2	1 7
1923	"	5	1 10 $\frac{1}{2}$	2	1 11 $\frac{1}{4}$	1	2 1 $\frac{1}{2}$	2	1 7 $\frac{3}{4}$
1895 to									
1900	Red Polls	10	1 4 $\frac{1}{2}$	2	1 8	2	0 12 $\frac{3}{4}$	1	0 11
1901	"	—	—	2	1 8 $\frac{1}{2}$	—	—	1	—
1902	"	—	—	3	1 8	—	—	—	1 2 $\frac{1}{4}$
1903	"	1	0 13 $\frac{3}{4}$	1	1 1 $\frac{1}{4}$	—	—	1	0 13
1904	"	1	1 13	2	1 1	1	1 7 $\frac{1}{4}$	—	—
1905	"	3	1 1	2	1 5	—	—	1	0 12
1906	"	7	1 0	—	—	2	0 14 $\frac{1}{4}$	—	—
1907	"	5	1 4	—	—	4	1 1 $\frac{1}{4}$	—	—
1908	"	1	1 2 $\frac{3}{4}$	—	—	—	—	1	1 1
1909	"	1	1 12	1	1 2 $\frac{3}{4}$	1	1 6 $\frac{1}{4}$	1	0 12 $\frac{3}{4}$
1910	"	2	1 3 $\frac{1}{4}$	1	1 9 $\frac{1}{4}$	—	—	1	1 2 $\frac{1}{4}$
1911	"	—	—	1	0 15	—	—	—	—
1912	"	1	1 0	—	—	—	—	—	—
1915	"	1	—	—	—	—	—	—	—
1919	"	6	1 10	5	1 6 $\frac{1}{4}$	—	—	—	—
1920	"	8	1 7 $\frac{1}{4}$	2	1 2	1	0 15 $\frac{1}{4}$	1	1 2
1921	"	7	1 12 $\frac{1}{2}$	6	1 6 $\frac{3}{4}$	2	1 9 $\frac{1}{4}$	2	1 7 $\frac{1}{2}$
1922	"	13	1 2 $\frac{3}{4}$	7	1 4	2	1 1 $\frac{1}{4}$	1	0 15
1923	"	7	1 8 $\frac{3}{4}$	4	1 6 $\frac{3}{4}$	1	2 4 $\frac{1}{2}$	1	2 2 $\frac{1}{4}$

TABLE III.—AVERAGE YIELD OF BUTTER OF THE DIFFERENT BREEDS AT DIFFERENT PERIODS—*Continued.*

Year.	Breed.	No. of Cows.	Days in Milk, 50.	No. of Cows.	Days in Milk, 100.	No. of Cows.	Days in Milk, 135.	No. of Cows.	Days in Milk, 190.
			lbs. ozs.		lbs. ozs.		lbs. ozs.		lbs. ozs.
1908	Ayrshires	—	—	—	—	—	—	1	0 12
1910	"	—	—	1	1 15	—	—	—	—
1912	"	2	1 4 $\frac{1}{2}$	2	1 6 $\frac{1}{2}$	—	—	—	—
1921	"	2	2 5	—	—	—	—	—	—
1922	"	16	1 7 $\frac{3}{4}$	3	1 2 $\frac{3}{4}$	—	—	1	1 2 $\frac{3}{4}$
1923	"	14	1 15	2	1 8 $\frac{1}{4}$	—	—	—	—
1909	South Devons	1	2 5 $\frac{3}{4}$	1	1 1 $\frac{3}{4}$	—	—	2	1 11 $\frac{1}{2}$
1910	"	1	2 5 $\frac{1}{4}$	4	1 11 $\frac{1}{2}$	1	2 0	1	0 12 $\frac{3}{4}$
1911	"	—	—	—	—	—	—	2	1 5
1912	"	2	2 0 $\frac{1}{2}$	—	—	1	2 3 $\frac{1}{2}$	1	1 10 $\frac{1}{4}$
1913	"	1	2 3 $\frac{1}{2}$	1	0 13	—	—	—	—
1914	"	3	2 1	1	1 15	1	1 4 $\frac{1}{2}$	1	1 2 $\frac{3}{4}$
1915	"	2	1 5 $\frac{1}{4}$	1	0 9	—	—	—	—
1921	"	1	2 6	3	1 8 $\frac{1}{2}$	—	—	1	2 7
1922	"	2	2 2 $\frac{3}{4}$	3	1 10 $\frac{1}{4}$	—	—	—	—
1923	"	2	2 5 $\frac{1}{2}$	1	1 15	—	—	—	—
1919	Devons	2	1 15 $\frac{1}{2}$	2	1 6 $\frac{1}{4}$	1	1 3	—	—
1920	"	2	1 15 $\frac{1}{2}$	—	—	—	—	—	—
1921	"	5	2 0 $\frac{1}{2}$	—	—	—	—	1	1 6
1922	"	6	1 12 $\frac{3}{4}$	—	—	—	—	1	0 14 $\frac{1}{2}$
1923	"	3	1 13 $\frac{1}{4}$	2	1 15 $\frac{1}{2}$	—	—	—	—
1908	Kerries & Dexters	—	—	—	—	1	0 14	2	1 2
1909	"	1	1 5	—	—	1	1 7	—	—
1911	"	—	—	—	—	—	—	1	1 3 $\frac{1}{2}$
1913	"	4	1 4 $\frac{1}{2}$	1	0 13 $\frac{1}{2}$	—	—	—	—
1919	"	4	1 15	1	1 4	1	0 10 $\frac{1}{2}$	2	0 14 $\frac{1}{2}$
1920	"	5	1 5 $\frac{3}{4}$	3	1 5	2	0 14 $\frac{1}{4}$	2	1 2 $\frac{1}{2}$
1921	"	7	1 2 $\frac{1}{2}$	5	1 4	2	0 15	6	0 14 $\frac{1}{2}$
1922	Kerries	7	1 2 $\frac{1}{2}$	5	1 1	—	—	1	0 12
1923	"	3	1 12	1	1 8	1	1 10 $\frac{3}{4}$	2	1 2 $\frac{3}{4}$
1922	Dexters	1	0 12	2	0 13	—	—	—	—
1923	"	1	0 10	1	0 10	—	—	6	0 15
1914	British Friesians	—	—	—	—	1	1 3 $\frac{1}{2}$	—	—
1915	"	1	1 14	1	1 10	—	—	—	—
1919	"	2	1 10 $\frac{1}{2}$	—	—	—	—	—	—
1920	"	10	1 12 $\frac{1}{4}$	3	1 11 $\frac{3}{4}$	2	2 21 $\frac{1}{4}$	—	—
1921	"	3	2 3 $\frac{1}{4}$	2	1 14	3	2 6 $\frac{1}{4}$	2	2 1 $\frac{1}{2}$
1922	"	17	1 11 $\frac{1}{2}$	3	1 12 $\frac{3}{4}$	2	1 0 $\frac{3}{4}$	2	1 0 $\frac{1}{2}$
1923	"	6	1 7 $\frac{1}{4}$	4	2 0 $\frac{3}{4}$	1	2 4 $\frac{1}{2}$	2	1 13 $\frac{3}{4}$
1922	Welsh Black	2	1 14 $\frac{3}{4}$	2	1 4 $\frac{3}{4}$	—	—	—	—

TABLE IV.—COMPARISON OF CHURNINGS WITH ANALYSES.

SHORTHORNS.

No. in Catalogue.	Weight of Butter Churned.	Total Fat by Analyses.	No. in Catalogue.	Weight of Butter Churned.	Total Fat by Analyses.
	lbs. ozs.	lbs. ozs.		lbs. ozs.	lbs. ozs.
2	1 10	2 2	51	2 0 $\frac{1}{4}$	1 4 $\frac{1}{2}$
4	1 1 $\frac{1}{4}$	1 2 $\frac{1}{2}$	57	0 15	1 1
6	0 15	1 2 $\frac{1}{2}$	66	1 0 $\frac{1}{2}$	1 3 $\frac{1}{2}$
7	1 9	1 15 $\frac{1}{2}$	73	0 12 $\frac{3}{4}$	1 8 $\frac{1}{4}$
9	1 6 $\frac{1}{2}$	1 14 $\frac{1}{2}$	97	3 4 $\frac{1}{2}$	3 10
12	1 7 $\frac{1}{2}$	1 7	99	2 5	3 0 $\frac{1}{2}$
14	2 5 $\frac{1}{2}$	2 12 $\frac{1}{4}$	100	1 5	2 0 $\frac{3}{4}$
15	2 12	2 10 $\frac{1}{2}$	101	1 9 $\frac{3}{4}$	1 14 $\frac{1}{2}$
20	1 7 $\frac{1}{4}$	1 13	104	2 8 $\frac{1}{2}$	2 11
21	2 11 $\frac{1}{2}$	2 13 $\frac{1}{2}$	105	2 1	2 2 $\frac{1}{2}$
22	4 0 $\frac{1}{2}$	3 13 $\frac{1}{2}$	109	2 1	2 9
23	2 7	2 15	110	2 2 $\frac{3}{4}$	2 8 $\frac{1}{2}$
25	2 4	2 10 $\frac{1}{2}$	118	1 9 $\frac{1}{2}$	1 5 $\frac{1}{2}$
28	2 9 $\frac{1}{4}$	2 12 $\frac{1}{2}$	127	1 5 $\frac{1}{4}$	1 7 $\frac{3}{4}$
29	3 3 $\frac{1}{2}$	2 15	128	1 10 $\frac{3}{4}$	1 10 $\frac{3}{4}$
31	1 9 $\frac{1}{4}$	1 12 $\frac{3}{4}$	129	1 8 $\frac{1}{4}$	1 11 $\frac{1}{2}$
45	1 6 $\frac{1}{4}$	1 7 $\frac{1}{2}$	130	1 8	1 14 $\frac{1}{2}$
				65 2 $\frac{1}{2}$	71 15

LINCOLN REDS.

135	1 14 $\frac{3}{4}$	1 14 $\frac{1}{2}$	145	0 13 $\frac{3}{4}$	1 13 $\frac{3}{4}$
136	1 11 $\frac{3}{4}$	1 15 $\frac{3}{4}$	146	2 4 $\frac{1}{2}$	2 7 $\frac{3}{4}$
137	2 0 $\frac{1}{2}$	2 6 $\frac{1}{2}$	149	3 2	2 13 $\frac{1}{2}$
138	1 13 $\frac{3}{4}$	2 8 $\frac{1}{4}$	158	1 15 $\frac{1}{2}$	1 14 $\frac{1}{2}$
144	1 2 $\frac{1}{2}$	1 13		16 14 $\frac{1}{2}$	19 11 $\frac{1}{2}$

BRITISH FRIESIANS.

180	2 10	2 12 $\frac{3}{4}$	209	2 2 $\frac{3}{4}$	2 5 $\frac{1}{2}$
181	2 4 $\frac{1}{2}$	2 12 $\frac{1}{2}$	210	1 8	1 13 $\frac{1}{4}$
185	1 13 $\frac{3}{4}$	2 2 $\frac{3}{4}$	211	1 12 $\frac{1}{2}$	2 0
200	0 14 $\frac{1}{4}$	2 3 $\frac{1}{4}$	212	2 5 $\frac{1}{2}$	2 6 $\frac{1}{2}$
201	0 13	1 2 $\frac{1}{2}$	215	1 10 $\frac{3}{4}$	2 2 $\frac{1}{2}$
202	1 15	2 2	229	1 6 $\frac{1}{4}$	1 6 $\frac{1}{2}$
208	1 9	1 15 $\frac{1}{2}$		22 14 $\frac{1}{2}$	27 5 $\frac{1}{4}$

TABLE IV.—COMPARISON OF CHURNINGS WITH ANALYSES—*Continued*.

RED POLL.

No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.		No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.	
	lbs.	ozs.	lbs.	ozs.		lbs.	ozs.	lbs.	ozs.
253	2	4½	2	11½	268	1	14½	2	2
255	1	15	2	0½	272	1	4	1	11½
257	2	2¼	2	7½	278	0	13½	1	4½
263	1	11	2	0½	283	2	1½	2	2½
264	0	14½	1	6	284	1	1½	1	3½
265	1	13	1	14¾	285	0	15¾	1	1½
266	2	2½	2	1¾					
						21	1½	24	2½

AYRSHIRES.

306	2	9	2	11½	327	1	13	1	15½
310	2	0½	2	7½	328	1	8½	1	9½
316	3	0½	3	5½	329	1	15½	2	0½
317	2	14½	2	15½	332	1	10½	1	13
318	2	8½	2	10½	333	1	1¾	1	4¾
319	1	6	1	8½	335	1	1	0	15¾
321	2	1½	2	7½	336	1	10½	1	15
323	1	7	1	9½	337	1	7½	1	10½
						30	3½	32	15½

GUERNSEYS.

338	1	14½	2	3½	346	1	13½	1	15½
342	1	1	1	5¾	347	2	1½	1	2
343	1	2	1	1½	348	2	5	2	5¾
344	1	2¾	1	1½	351	1	9	1	12½
345	1	8½	1	11½	358	2	3	2	1½
						16	12¾	16	12½

JERSEYS.

370	1	9¾	1	8½	399	1	14¾	1	15½
371	1	9½	1	6¾	402	2	2	2	1½
372	2	0¼	2	3¾	407	2	1	2	2½
373	2	5	2	5½	408	1	15	1	15¾
374	2	0	2	3½	412	1	10½	1	9¾
375	1	2½	1	3½	413	2	1	2	3½
376	1	7½	1	9½	414	1	5½	1	6½
382	1	0½	1	4½	420	1	14½	1	13
385	1	14	1	14½	423	1	2½	1	3½
389	1	2¼	1	8½	424	1	8½	1	8½
391	1	13	1	14½	432	1	2¾	1	2½
394	1	8½	1	11½	443	1	3½	1	3½
397	1	13½	1	14½					
						41	6½	42	6½

TABLE IV.—COMPARISON OF CHURNINGS WITH ANALYSES—*Continued.*

SOUTH DEVONS.

No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.		No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.	
	lbs.	ozs.	lbs.	ozs.		lbs.	ozs.	lbs.	ozs.
232	2	9	2	15 $\frac{1}{2}$	235	1	15	2	1
233	2	2	2	1 $\frac{1}{2}$					
						6	10	7	2 $\frac{1}{2}$

DEVONS.

237	2	6	2	7 $\frac{1}{2}$	240	1	13 $\frac{3}{4}$	1	14 $\frac{1}{2}$
238	2	1 $\frac{1}{2}$	2	1 $\frac{1}{2}$	241	1	6	1	7 $\frac{1}{4}$
239	1	13	1	15 $\frac{1}{2}$					
						9	8 $\frac{1}{2}$	9	14 $\frac{1}{2}$

KERRIES.

450	1	13	1	12 $\frac{1}{2}$	457	1	8	1	7 $\frac{1}{2}$
451	1	4 $\frac{1}{2}$	1	9 $\frac{3}{4}$	464	2	4 $\frac{1}{2}$	2	3 $\frac{3}{4}$
452	1	3	1	5 $\frac{1}{2}$	466	1	10 $\frac{3}{4}$	not stated	
453	1	11	1	5 $\frac{1}{4}$					
						10	13	9	12

DENTERS.

479	1	4 $\frac{3}{4}$	1	3 $\frac{1}{2}$	488	0	12	0	12
482	1	2 $\frac{1}{4}$	0	15 $\frac{1}{2}$	489	0	10	0	9 $\frac{3}{4}$
483	0	10 $\frac{1}{2}$	0	12 $\frac{1}{2}$	491	1	2 $\frac{1}{2}$	1	0 $\frac{1}{2}$
484	0	10 $\frac{1}{2}$	0	10 $\frac{1}{2}$					
487	0	10	0	12 $\frac{1}{4}$		6	14 $\frac{1}{2}$	6	12 $\frac{1}{4}$

TABLE V.—AVERAGE DIFFERENCES BETWEEN CHURNINGS AND CHEMICAL ANALYSES FROM 1898.

Year	Breed	Churn	Analyses
		Lbs. Butter	Lbs. Fat
1898	Shorthorns	38.92	36.82
1899	"	34.34	32.46
1900	"	35.55	37.87
1901	"	29.05	27.80
1902	"	53.48	55.91
1903	"	30.72	35.92
1904	"	22.98	26.59
1905	"	30.89	30.58
1906	"	31.38	33.59
1907	"	45.14	47.79
1908	"	43.74	49.78
1909	"	35.06	35.91
1910	"	41.62	44.75
1911	"	47.79	48.00
1912	"	61.10	63.85
1913	"	43.01	48.69
1914	"	36.87	39.14
1915	"	32.50	40.15
1919	"	43.86	42.40
1920	"	51.25	52.57
1921	"	94.84	112.69
1922	"	61.26	71.69
1923	"	65.15	71.94
1907	Lincolnshire Red Shorthorns ...	12.94	12.31
1908	" " " "	15.79	15.56
1909	" " " "	14.06	13.48
1910	" " " "	13.87	13.62
1911	" " " "	10.16	10.00
1912	" " " "	11.47	12.00
1913	" " " "	9.12	8.65
1914	" " " "	6.44	6.47
1915	" " " "	3.29	3.16
1919	" " " "	7.47	7.15
1920	" " " "	5.37	5.81
1921	" " " "	12.77	13.01
1922	" " " "	15.62	14.96
1923	" " " "	16.90	19.72
1898	Jerseys	29.15	27.26
1899	"	23.61	22.54
1900	"	39.75	39.32
1901	"	33.19	31.82
1902	"	43.61	41.03
1903	"	27.04	26.41
1904	"	22.22	22.06
1905	"	24.53	22.44
1906	"	19.56	18.71
1907	"	22.64	—
1908	"	22.25	—
1909	"	37.65	35.89
1910	"	*30.37	30.18
1911	"	27.62	26.18
1912	"	14.39	13.39

* Excluding Nos. 142 and 146.

TABLE V.—AVERAGE DIFFERENCES BETWEEN CHURNINGS AND CHEMICAL ANALYSES FROM 1898—*Continued.*

Year	Breed	Churn	Analyses
		Lbs. Butter	Lbs. Fat
1913	Jerseys	29.54	*20.90
1914	"	17.44	16.14
1915	"	16.16	14.67
1919	"	37.44	35.18
1920	"	25.06	24.55
1921	"	29.75	28.50
1922	"	43.22	42.05
1923	"	41.38	41.40
1898	Guernseys	18.07	8.25
1899	"	15.90	5.53
1900	"	0.84	11.10
1901	"	2.46	11.59
1902	"	1.23	1.34
1903	"	5.34	6.47
1904	"	4.89	4.94
1905	"	3.42	3.42
1906	"	2.41	1.82
1907	"	3.54	3.22
1908	"	3.69	3.52
1909	"	3.20	3.52
1910	"	2.44	2.81
1911	"	0.87	1.50
1912	"	2.31	2.96
1913	"	†8.48	7.59
1914	"	†4.96	5.28
1915	"	10.31	11.08
1919	"	23.72	23.66
1920	"	21.23	21.62
1921	"	28.94	28.87
1922	"	22.46	23.14
1923	"	16.80	16.78
1898	Red Polls	5.04	5.56
1899	"	8.48	8.33
1900	"	8.98	9.81
1901	"	3.07	2.88
1902	"	8.36	8.00
1903	"	5.01	6.95
1904	"	5.39	6.00
1905	"	13.42	14.53
1906	"	11.39	14.50
1907	"	12.53	16.08
1908	"	3.21	4.06
1909	"	5.09	5.71
1910	"	5.12	6.25
1911	"	0.94	1.08
1912	"	1.00	1.31
1919	"	16.71	18.83
1920	"	15.98	18.89
1921	"	27.06	29.98
1922	"	28.33	35.61
1923	"	21.07	24.15

* Does not include the fat of Jersey Heifers competing in the Tests.

† Does not include the fat of Guernsey Heifers competing in the Tests.

TABLE V.—AVERAGE DIFFERENCES BETWEEN CHURNINGS AND CHEMICAL ANALYSES FROM 1898—*Continued.*

Year	Breed	Churn	Analyses
		Lbs. Butter	Lbs. Fat
1909	South Devons	6.89	7.03
1910	"	12.03	13.06
1911	"	2.64	3.25
1912	"	7.92	8.39
1913	"	3.01	3.75
1914	"	10.50	11.00
1915	"	3.22	4.16
1921	"	9.46	10.50
1922	"	9.25	9.71
1923	"	6.62	7.13
1919	Devons	7.92	8.10
1920	"	3.94	3.59
1921	"	11.58	12.73
1922	"	11.69	12.72
1923	"	9.51	9.88
1910	Ayrshires	1.94	1.75
1912	"	5.37	5.89
1921	"	4.62	4.69
1922	"	27.85	31.52
1923	"	30.19	32.95
1907	Kerries	3.40	3.19
1908	Kerries and Dexters	6.89	7.09
1909	Kerries	2.75	2.64
1911	"	1.21	0.96
1913	"	5.94	6.10
1919	"	4.66	4.64
1920	"	11.50	11.48
1921	"	18.78	21.96
1922	"	14.14	13.57
1923	"	10.81	*9.75
1919	Dexters	5.77	5.58
1920	"	3.96	3.84
1921	"	2.06	2.5
1922	"	2.52	2.77
1923	"	6.90	6.76
1914	British Friesians	1.20	1.69
1915	"	3.50	4.00
1919	"	3.31	3.33
1920	"	27.10	29.06
1921	"	21.81	25.18
1922	"	38.87	44.50
1923	"	22.92	27.32
1922	Welsh Black... ..	7.30	6.70

* Does not include the fat of No. 466.

BUTTER TESTS—SHORTHORN.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour	Quality of Butter	No. of Pails for Butter	No. of Pails for Lactation	Total Pounds of	Awards								
						Morn.	Even.	Total																
		lbs.		1923.																				
Mr Clifford Cory, Bart.	Lady Barrington 2nd	1171	Dec. 2, 1917	Aug. 24	59	29	11	23	5	3	61	10	32	61	V. Pale	Soft	26	00	1	90	27	90		
Mr G. A. H. Willis, Bart.	Thurnham Ringlet 7th	1454	Oct. 3, 1917	Dec.	63	19	13	14	10	10	24	8	1	32	72	Fair	Soft	17	25	12	00	29	25	
Kingsclere Farms	Bridesmaid 8th ...	1358	Sept. 26, 1915	May	1	17	14	5	13	5	27	10	15	29	46	Fair	Soft	15	00	12	00	27	00	
T. T. Fisher	Waterbrook Princess 2nd	1581	Aug. 5, 1916	June 19	125	27	22	10	18	12	1	9	31	20	Pale	Soft	25	00	8	50	33	50		
J. Brown	Longhills Charming	1248	July 4, 1918	Sept. 8	44	22	6	27	6	19	12	1	6	35	37	Pale	Soft	22	50	40	22	40		
C. C. Vestey	Bianca Blanche Duchess 2nd	1331	May 13, 1917	Aug. 15	68	18	16	15	0	33	10	1	7	22	89	Good	Good	23	50	2	80	26	30	
L. Pierpont Morgan	Nelly Lee A2 ... 11th	1532	Aug. 14, 1914	Aug. 24	59	31	8	25	10	57	22	5	1	24	53	Fair	Soft	37	25	1	90	39	15	H.C.
Pierpont Morgan	Hadnock Charming Lass 9th	1636	June 30, 1914	July 17	97	29	19	24	8	54	52	12	19	75	Fair	Soft	44	00	5	70	49	70	H.C.	
Twentyman	Rosette Prim 3rd	1520	Mar. 13, 1918	Sept. 28	24	21	11	20	10	42	5	1	7	29	11	Good	Good	23	25	—	23	25		
Major S. P. Yates	Bright Darling ...	1348	Dec. 22, 1916	Oct. 5	17	39	5	33	11	73	0	2	1	26	85	Good	Soft	43	50	—	43	50	H.C.	
Major S. P. Yates	Clara's Beauty ...	1278	Mar. 4, 1918	Sept. 30	22	35	5	39	6	74	11	4	0	18	52	Good	Soft	64	50	—	64	50	1st Prize and George Bay Ham Nelson Chaff Cup	
Major S. P. Yates	Foggathorpe Primrose	1221	Sept. 5, 1915	May 25	150	34	14	30	6	65	4	2	7	26	66	Fair	Soft	39	00	11	00	50	00	H.C.

BUTTER TESTS—SHORTHORNS—Continued.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milks	Milk Yield			Ratio, viz., lbs. Butter to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards
						Morn.	Even.	Total		Colour	Quality				
						lbs ozs	lbs ozs	lbs ozs							
D. Aldridge ...	Merry Maid 5th...	1337	May 3, 1917	1923, Sept. 6	46 30	2 28	3 58	5 2	4 25 88	Pale	Soft	36 00	60 36 60	—	H.C.
Lt. Col. W. M. Pryor, D.S.O. J. H. Robinson ...	Betty 24th ...	1322	Sept. 21, 1917	Sept. 14	38 30	10 24	5 54	15 2	9 21 30	Pale	Soft	41 25	—	41 25	H.C.
	Kirklevinton 54th	1318	Sept. 18, 1917	Oct. 1	21 22	14 19	13 42	11 3	3 13 24	Good	Good	51 50	—	51 50	3rd Prize
The Earl of Sandwich	Leazow	1406	Sept. 20, 1918	Sept. 6	46 22	11 19	14 42	9 1	9 26 96	Pale	Good	25 25	6	25 85	
D. Aldridge ...	Seraphina 9th Barrington	1158	Nov. 19, 1918	Oct. 6	16 22	11 19	11 42	6 1	6 30 13	Fair	Fair	22 50	—	22 50	
L. Hignett ...	Victoress Longhills Melody	1396	Sept. 1, 1918	Sept. 26	26 34	6 31	11 66	1 2	0 32 77	Fair	Soft	32 25	—	32 25	H.C.
The Earl of Sandwich	Hinchbrook	998	Jan. 7, 1921	June 8	136 10	14 10	11 21	9	15 23 00	V. Pale	Good	15 00	9 60	24 60	
Major S. P. Yates	Harebell Sorbrook Timbrell	1157	April 25, 1921	Sept. 8	44 13	11 11	14 25	9 1	0 24 78	Fair	Fair	16 50	40 16 90	—	
J. G. Peel ...	Longhills Dewberry 2nd	1318	Sept. 4, 1920	Sept. 7	45 21	8 19	10 41	2	12 51 60	Good	Good	12 75	50 13 25	—	
A. B. Croxon ...	Spot ...	1446	1914	Sept. 30	22 37	5 29	5 66	10 3	4 20 30	Good	Soft	52 50	—	52 50	2nd Prize
Belgian Breeding Stock Farms	Lady Carlisle	1378	—	Oct. 2	20 19	2 17	0 36	2 2	5 15 62	Good	Soft	37 00	—	37 00	H.C.
Belgian Breeding Stock Farms	Lady Berwick	1279	—	Sept. 30	22 19	13 17	2 36	15 1	5 28 18	Good	Soft	21 00	—	21 00	

BUTTER TESTS—SHORTHORNS—Continued.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards																
						The ozs. lbs. ozs. lbs. ozs. lbs.					Colour	Quality																				
						Morn.	Even.	Total																								
N. Hardman ...	Fell Pail ...	1161	1917	1923, Oct. 3		19	17	8	13	3	30	11	1	93	22	57	Good	Fair	25	75												
J. L. Shirley ...	Charming Lass ...	1426	—	Oct. 6	16	29	13	26	11	56	8	2	83	22	32		Pale	Fair	40	50										H.C.		
J. L. Shirley ...	Ruby ...	1339	—	Sept. 20	32	28	6	22	2	50	8	2	1	24	48		V. Pale	Fair	33	00												
J. R. Goodman ...	Marion ...	1292	1917	June 30	11	28	10	29	0	57	10	2	1	27	43		Fair	Fair	33	00					7	40	40	40		H.C.		
J. R. Goodman ...	Pretty Maid ...	1276	1918	Sept. 12	40	33	6	29	2	62	8	2	23	28	77		Fair	Fair	34	75											H.C.	
Capt. Sir Mark Collett, Bart.	Beauty 4th ...	1105	Aug. 29, 1920	Sept. 9	43	23	8	18	8	42	0	1	92	26	35		V. Pale	Good	25	50					30	25	80					
G. Twentyman ...	Violet 16th ...	1330	Sept. 11, 1920	Oct. 7	15	17	6	14	13	32	3	1	51	24	23		Good	Good	21	25												
A. Stapleton & Sons, Ltd.	Enfield Queen 4th	1249	Dec. 3, 1920	Sept. 29	23	19	14	16	6	36	4	1	103	21	68		Pale	Soft	26	75												
A. Stapleton & Sons, Ltd.	Brooklands Buttercup 2nd	1082	Dec. 21, 1920	Sept. 17	35	22	2	18	0	40	2	1	81	26	47		V. Pale	Good	24	75												
A. Stapleton & Sons, Ltd.	Lady of Enfield...	1208	Jan. 7, 1921	Sept. 27	25	21	14	17	6	39	4	1	8	26	16		Pale	Good	24	00												
B. G. Bowser ...	Seothern Actress	1551	April 9, 1916	Aug. 25	58	29	8	25	0	54	8	1	143	28	35		Fair	Soft	30	75					1	80	32	55				
B. G. Bowser ...	Seothern Mystic...	1448	May 26, 1918	May 27	148	21	8	17	13	39	5	1	113	22	66		Good	Good	27	75					10	80	38	55				H.C.

BUTTER TESTS—SHORTHORNS—Continued.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milking	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards.
						Morn. lbs	Even. lbs	Total lbs			Colour	Quality				
S. Blundell	Bendish Freda	1498	Oct. 15, 1915	1923. Sept. 30	22	23	46	22	01	22	88	Good	32	25	32	25
S. Blundell,	Bendish Hope 3rd	1399	Oct. 10, 1917	Oct. 8	14	27	519	10	46	15	13	Good	29	75	29	75
Arthur Barber	Retford Milker ...	1456	Dec. 20, 1918	Sept. 26	26	23	14	20	0	43	14	1	18	50	18	50
J. Evens & Son	Burton Ruby 23rd	1583	April 29, 1916	Oct. 3	19	28	6	21	8	49	14	Good	13	75	13	75
J. Evens & Sons	Burton Amy 7th	1386	Mar. 14, 1916	June 3	14	31	3	25	5	56	8	Fair	36	25	10	46
J. Evens & Son	Burton Ruby Spot 15th	1477	Sept. 16, 1918	Sept. 6	46	33	3	30	8	63	11	Good	50	00	60	50
Arthur Barber	Retford Russell 2nd	1097	Jan. 7, 1921	Sept. 1	51	24	6	18	11	43	1	Good	31	25	1	10

BUTTER TESTS—SHORTHORNS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				Butterdolk, when churning finished
		Churning began	Churning finished	Duration of Churning	Temperature Cream and Churn	
				Minutes	Degrees	Degrees
2	Lady Barrington 2nd	9 10 a.m.	9 30 a.m.	20	58	57
4	Thurham Ringlet 7th	9 10 "	10 20 "	70	58	58
6	Bridesmaid 8th	9 10 "	10 18 "	68	58	58
7	Watercock Princess 2nd	9 10 "	9 38 "	28	58	56
9	Longhills Charming Duchess 2nd	9 10 "	9 31 "	21	58	56
12	Bianca Blanche 11th	9 22 "	9 45 "	23	60	54
14	Nelly Lee A2	9 24 "	9 47 "	23	60	56
15	Hadnock Charming Lass 9th	9 37 "	10 0 "	23	60	56
20	Rosette Prim 3rd	9 51 "	10 27 "	36	60	56
21	Bright Darling	9 50 "	10 13 "	23	60	54
22	Clara's Beauty	9 55 "	10 11 "	16	60	54
23	Foggathorpe Primrose	9 24 "	9 51 "	27	60	57
25	Merry Maid 5th	9 21 "	9 39 "	18	60	56
28	Betty 24th	9 16 "	9 39 "	23	58	56
29	Kirklevinton 54th	9 15 "	9 48 "	33	58	56
31	Leazow Scaphina 9th	10 0 "	10 45 "	45	60	56
45	Barrington Victress	10 3 "	10 34 "	31	60	55
51	Longhills Melody	10 10 "	11 5 "	55	60	56
57	Hinchbrook Harebell	10 15 "	11 25 "	70	60	55
66	Sorbrook Timbrel	10 15 "	10 55 "	40	60	52
73	Longhills Dewberry 2nd	10 20 "	10 46 "	26	60	54
97	Spot	10 24 "	10 39 "	15	60	52
99	Lady Carlisle	10 30 "	10 45 "	15	60	56
100	Lady Berwick	10 33 "	10 50 "	17	60	55

BUTTER TESTS—SHORTHORNS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Duration of Churning	Temperature	
		Churning began	Churning finished		Dairy	Cream and Churn
				Minutes	Degrees	Degrees
101	Fill Pail	10 34 a.m.	10 52 a.m.	18	60	54
104	Charming Lass... ..	10 40 "	11 0 "	20	60	54
105	Ruby	10 49 "	11 15 "	26	60	54
109	Marion	10 50 "	11 25 "	35	60	54
110	Pretty Maid	10 57 "	11 37 "	40	60	56
118	Beauty 4th	11 0 "	11 58 "	58	60	58
127	Violet 16th	11 4 "	11 35 "	31	60	56
128	Enfield Queen 4th	12 0 p.m.	12 17 p.m.	17	61	54
129	Brooklands Buttercup 2nd	11 8 a.m.	11 55 a.m.	47	60	57
130	Lady of Enfield	11 15 "	11 45 "	30	60	56
135	Southern Actress 2nd	11 8 "	11 32 "	24	60	54
136	Southern Mystic	11 23 "	11 40 "	17	60	54
137	Bendish Freda 2nd	11 30 "	11 57 "	27	60	56
138	Bendish Hope 3rd	11 15 "	11 50 "	35	60	56
144	Retford Milker... ..	11 30 "	12 5 p.m.	35	60	56
145	Burton Ruby 23rd	11 32 "	11 50 a.m.	18	60	54
146	Burton Amy 7th	11 50 "	12 45 p.m.	55	61	57
149	Burton Ruby Spot 15th...	11 42 "	12 17 "	35	60	56
158	Retford Russett 2nd	11 40 "	12 5 "	25	60	55

BUTTER TESTS--BRITISH FRIESIANS.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Points	Awards
						Morn.	Even.	Total			Colour	Quality				
1923.																
0 G. Holt-Thomas...	Blackmore Eua	1309	April 4, 1915	Aug. 22	61.35	10.28	11.64	52.10	24.50	Fair	Fair	Fair	42.00	2.40	44.40	3rd Prize
1 G. Holt-Thomas...	Kingswood	1483	Nov. 10, 1916	June 15	129.36	8.25	13.62	52	41.27	Good	Good	Good	36.50	8.90	45.40	2nd Prize
5 A. H. Guest ...	Myrtle Leaf Chaddersley Gaby	1438	April 17, 1918	Aug. 31	52.33	10.26	8.60	24	43.32	Pale	Soft	Soft	29.75	1.2	30.95	
9 Hache Herd ...	Hache Bertram	1154	April 8, 1920	Sept. 9	43.80	0.25	3.55	3	14.59	Pale	V. Soft	V. Soft	14.75	.30	15.05	
1 Hache Herd ...	Hache Cerkar	1294	Mar. 30, 1920	Sept. 26	26.34	5.32	6.66	11	13	Good	Soft	Soft	13.00		13.00	
2 Lt.-Col. C. W. Birkin, C.M.G. W. & R. Wallace	Ursula Clockhouse Bessie	1268	Oct. 8, 1918	Aug. 26	57.27	5.25	2.52	7.15	27.06	V. Good	Good	Good	31.00	1.70	32.70	H.C.
4 W. & R. Wallace	Hadham Duchess	1322	Aug. 18, 1918	Sept. 27	5.29	0.26	3.55	3.1	9	35.32	Pale	Soft	25.00		25.00	
6 W. & R. Wallace	Knebworth	1426	Sept. 5, 1919	Sept. 16	36.35	13.20	8.56	52	23.25	Pale	Soft	Soft	34.75		34.75	4th Prize
7 F. W. Gilbert ...	Yntes Marigold	1322	Aug. 24, 1918	Sept. 10	42.25	14.20	0.45	14.1	8	30.58	Pale	Soft	24.00	20.24	24.20	
8 Lt.-Col. J. F. N. Baxendale	Countess Froxfield Cowslip	1531	Sept. 23, 1918	Aug. 31	52.29	0.27	5.56	5.1	12.1	31.63	Pale	Fair	28.50	1.20	29.70	
9 G. Holt-Thomas...	Kingswood Ceres	1528	Jan. 28, 1919	June 8	136.32	13.25	2.57	15.2	54.24	72	Fair	Fair	37.50	9.00	46.40	1st Prize
10 F. & T. Neame ...	Myrtle Macknade Endaw	1364	Dec. 9, 1918	Sept. 13	39.33	14.28	11.62	9.1	103	37.42	Pale	Fair	26.75		26.75	
11 Hache Herd ...	Hache Akkar	1330	Jan. 28, 1921	May 25	150.21	8.20	5.41	13.1	61	30.06	Good	Soft	22.25	11.00	33.25	H.C.

BUTTER TESTS—BRITISH FRIESIANS—Continued.

No. in Cata- logue	Name of Animal	CHURNING—TIME AND TEMPERATURE					Buttermilk, when churn- ing finished			
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and churn				
								Time		Temperature
								Minutes		
180	Blackmore Eva 2nd	11 54 a.m.	12 38 p.m.	44	Degrees 61	Degrees 52	Degrees 56			
181	Kingswood Myrtle Leaf	12 6 p.m.	12 33 "	27	61	52	57			
185	Chaddersley Gabby	12 7 "	12 42 "	35	61	52	56			
200	Hache Bertram Umbra	11 54 a.m.	12 30 "	36	61	52	56			
201	Hache Cerkar Ursula	12 17 p.m.	12 52 "	35	62	52	56			
202	Clockhouse Bessie	12 9 "	12 47 "	38	61	52	56			
208	Hadham Duchess	12 17 "	12 51 "	34	62	52	58			
209	Knebworth Yntes Marigold	12 20 "	12 47 "	27	62	52	57			
210	Betygardis Countess	12 40 "	1 10 "	30	62	52	56			
211	Froxfield Cowslip	12 24 "	1 50 "	26	62	52	56			
212	Kingswood Ceres Myrtle	12 30 "	1 0 "	30	62	52	54			
215	Macknade Endaw	12 38 "	1 0 "	22	62	52	56			
229	Hache Akkar Virtue	12 30 "	1 0 "	30	62	52	56			

BUTTER TESTS—RED POLLS.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter.		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards	
						Morn.	Even.	Total			Colour	Quality					
J. B. Dimmock ...	Gressenhall Wild Girl	944	Oct. 4, 1916	1923. June 24	120	33	0 25	13 58	13	2 41	25-95	Fair	36-25	8-00	44-25	2nd Prize	
Mrs. R. M. Foot...	Harefield Dawn...	997	Nov. 8, 1917	Sept. 1	51	26	0 20	6 46	6	1 13	24-25	Good	31-00	1-10	32-10		
S. Scrimgeour ...	Sotterley Winsome	1155	Jan. 19, 1917	May 8	107	31	5 27	2 58	7	2 21	24-37	Fair	34-25	12-00	46-25	1st Prize	
Felix W. Leach ...	Meddler Starlight	1268	Jan. 24, 1919	Oct. 3	19	23	14 20	10 44	8	1 11	26-37	Good	27-00	—	27-00		
W. G. Munnings...	Mendham	1294	Aug. 1, 1919	Aug. 29	54	24	8 23	6 47	14	14 52	82	Good	V. Soft	14-50	1-40	15-90	H.C.
Capt. A. Richardson	Seven Springs Queen Yda	1050	Mar. 16, 1919	Aug. 27	56	25	10 21	8 47	2	1 13	26-0	Pale	29-00	1-60	30-60	H.C.	
Capt. A. Richardson	Seven Springs Lupine	1239	Sept. 26, 1919	Sept. 20	32	28	0 24	11 52	11	2 21	24-43	Pale	34-50	—	34-50	3rd Prize	
Capt. F. W. Winterbottom	Hutton Ruth ...	1321	Aug. 14, 1919	Sept. 20	32	21	14 18	8 40	61	14 21	18	Good	Fair	30-50	—	30-50	H.C.
T. Brown & Son...	Rickmansworth Utopia V. 16	1198	Jan. 12, 1920	Sept. 6	46	19	11 17	10 37	5	1 42	29-85	Good	20-00	60	20-60		
N. A. Heywood ...	Kirton Dora ...	1242	Sept. 3, 1920	Sept. 10	42	17	3 16	8 33	11	13 39	92	Good	V. Soft	13-50	20	13-70	H.C.
Capt. A. Richardson	Seven Springs Berry	910	Oct. 25, 1920	Sept. 25	27	19	13 17	10 37	7	2 11	17-87	Pale	33-50	—	33-50	H.C.	
Mrs. R. M. Foot...	White Hill Pansy	942	Jan. 29, 1921	Aug. 27	56	16	11 13	14 30	9	1 14	28-34	Pale	17-25	1-60	18-85		
Mrs. R. M. Foot...	White Hill Flight	1149	Mar. 5, 1921	Sept. 7	45	15	2 11	10 26	12	15 37	17	Pale	15-75	50	16-25		

BUTTER TESTS—RED POLLS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				Buttermilk, when churning finished	
		Time		Duration of Churning	Temperature		
		Churning began	Churning finished		Dairy		Cream and Churn
				Minutes	Degrees	Degrees	Degrees
253	Gressenhall Wild Girl	2 32 p.m.	3 11 p.m.	39	60	52	57
255	Harefield Dawn	2 38 "	3 0 "	22	60	52	56
257	Sotterley Winsome	2 36 "	3 17 "	49	60	52	55
263	Meddler Starlight	2 40 "	3 4 "	24	60	52	56
264	Mendham Dowager	4 54 "	5 30 "	36	61	52	56
265	Seven Springs Queen Yda	4 40 "	5 10 "	30	61	52	57
266	Seven Springs Lupine	4 24 "	5 8 "	44	60	52	56
268	Hutton Ruth	4 17 "	4 51 "	34	60	52	56
272	Rickmansworth Utopia V. 16	4 0 "	4 27 "	27	61	52	56
278	Kirton Dora	4 12 "	4 35 "	23	60	52	57
283	Seven Springs Berry	4 12 "	4 48 "	36	60	52	60
284	White Hill Pansy	3 50 "	4 38 "	48	61	52	58
285	White Hill Flight	3 35 "	4 0 "	25	61	52	57

BUTTER TESTS—AYRSHERS.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards.
						Morn.	Even.	Total			Colour	Quality				
6 A. V. Allan	Aitkenbar Kate	1134	Mar. 20, 1918	1923.	36.31	14.29	3.61	1.2	9	25.00	Pale	Soft	41.00	—	41.00	3rd Prize
0 George Dunlop	Burstibly Helga...	1050	Mar. 23, 1919	Oct.	5	17.31	5.25	8.56	13.2	0.1	28.18	Fair	32.25	—	32.25	H.C.
6 A. & A.	Barr Amelia	1178	Mar. 20, 1916	Sept. 16	36.34	14.26	13.61	11.3	0.3	20.21	Pale	Soft	48.75	—	48.75	1st Prize
7 A. & A.	Barr Flirt	1059	April, 1917	Sept. 25	27.27	8.24	13.52	5.2	14.1	18.00	Pale	Fair	46.50	—	46.50	2nd Prize
8 Thomas Barr	Southside Rosie	1186	April 9, 1916	Oct.	2	20.34	8.28	13.63	5.2	8.1	25.01	Good	40.50	—	40.50	H.C.
9 Lt.-Col. R. E. Cecil, D.S.O.	Netherton Queen	1209	Jan. 28, 1920	Aug. 30	53.18	13.15	3.34	0.1	6	24.72	Good	Good	22.00	1.30	23.30	H.C.
1 A. Y. Allan	Greenfield 4th Aitkenbar Winnie	1019	Aug. 12, 1920	Oct.	8	14.25	11.20	5.46	0.2	1.1	21.95	Pale	33.50	—	33.50	H.C.
3 John Logan	Baryneck Stella	1180	Nov. 29, 1920	Sept. 20	32.21	3.17	13.39	0.1	7	27.13	V. Pale	Fair	23.00	—	23.00	H.C.
7 Major C. R. Dudgeon	Cargen Holm	835	Feb. 3, 1921	Sept. 14	38.26	8.21	3.47	11.1	13	26.31	Pale	Fair	29.00	—	29.00	H.C.
8 Major C. R. Dudgeon	Proud Lady 8th Cargen Holm	890	Feb. 12, 1921	Sept. 20	32.21	13.15	11.37	8.1	8.1	24.48	V. Pale	Fair	21.50	—	24.50	H.C.
9 Major C. R. Dudgeon	Cargen Holm	891	Jan. 14, 1921	Sept. 26	26.27	13.22	2.49	15.1	15.1	25.36	V. Pale	Fair	31.50	—	31.50	H.C.
2 Thomas Barr	Maud 16th Hobsland Lottie	1160	Mar. 10, 1921	Sept. 20	32.20	6.18	0.38	6.1	10.1	23.39	V. Pale	Good	26.25	—	26.25	H.C.

BUTTER TESTS—AYRSHIRES—Continued.

Exhibitor	Name of Animal	Live Weight lbs.	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards
						Morn. lbs	Even. lbs	Total lbs		Colour	Quality				
Thomas Barr ...	Hobsland Janet	1068	Jan. 27, 1921	1923. Sept. 26	2615	314	529	81	1326.59	Pale	Good	17.75	-	17.75	
A. W. Montgomerie	Netherton Nesta	1123	Feb. 3, 1921	Oct. 2	2013	612	825	141	124.35	Fair	Good	17.00	-	17.00	
James Seton ...	Shewalton Mains Gay Lass 6th	952	Sept. 11, 1920	Sept. 1	5120	1015	1336	71	10222.00	Good	Soft	26.50	1-10	27.60	H.C.
David Wallace ...	Anchenbrain Dandy 6th	1092	Feb. 26, 1921	Sept. 23	2920	1318	238	151	7126.79	V.P.	Good	23.25	-	23.25	

BUTTER TESTS—AVERAGES—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Degrees
						Buttermilk, when churning finished
						Degrees
306	Aitkenbar Kate 3rd	3 50 p.m.	4 22 p.m.	32	61	56
310	Barsbilly Helga	2 47 "	3 8 "	21	60	57
316	Barr Amelia	4 10 "	4 30 "	20	60	56
317	Barr Flirt	4 19 "	4 50 "	31	60	56
318	Southside Rosie 2nd	4 12 "	4 47 "	35	60	54
319	Netherton Queen Greenfield 4th	4 22 "	5 40 "	78	60	58
321	Aitkenbar Winnie	4 24 "	4 50 "	26	60	56
323	Bergenoch Stella	4 35 "	5 36 "	61	60	56
327	Cargen Holm Proud Lady 8th	4 30 "	5 10 "	40	60	58
328	Cargen Holm Maggie	4 40 "	5 23 "	43	61	56
329	Cargen Holm Maud 16th	4 35 "	4 50 "	15	61	56
332	Holsland Lottie	3 27 "	4 13 "	46	60	57
333	Holsland Janet	3 10 "	3 55 "	45	60	56
335	Netherton Nesta 2nd	3 30 "	4 50 "	80	60	58
336	Shewatton Mains Gay Lass 6th	3 22 "	3 45 "	23	60	56
337	Auchenbrain Dandy 6th	2 43 "	5 20 "	157	60	59

BUTTER TESTS—GUERNSEYS.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards				
						Morn.	Even.	Total		Colour	Quality								
						lbs	ozs	lbs	ozs	lbs	ozs								
Sir James Remnant, Bt., M.P.	Princess of Caillioterie	1101	Mar. 7, 1912	1923. June	4-140	19	2-16	14-36	0 1	14 1	18-88	Good	Good	30-50	10-00	40-50	1st Prize		
A. Chester Beatty	Lizette of St. Catherine	924	June 20, 1918	April 11	194	17	0-12	11-29	11 1	1	27-94	Good	Fair	17-00	12-00	29-00			
A. Chester Beatty	Masher Girl of the Marais	907	Feb. 8, 1916	Sept. 5	47	14	11 11	2-25	13 1	2	22-94	Good	Fair	18-00	7-00	18-70			
A. Chester Beatty	Rowanberry of Goodnestone	958	April 23, 1916	Sept. 18	34	18	13	13	14	32	11 1	23	28-10	Good	V. Soft	18-75	18-75		
Sir E. A. Hambro, K.C.V.O.	Donita of Les Grantes	994	Nov. 20, 1918	Sept. 16	36	25	3	16	3	41	6 1	8 1	27-02	Good	Fair	24-50	24-50		
Sir E. A. Hambro, K.C.V.O.	Florrie 2nd of the Breque	1014	April 16, 1919	Aug. 25	58	26	6	20	8	46	14 1	13 1	25-42	Good	Good	29-50	1-80	31-30	H.C.
Lady Ludlow ...	Myrtle Lady 2nd of Newgrove	955	June 21, 1920	July 11	103	16	10	15	10	32	4 2	1 1	15-40	Fair	Good	33-50	6-30	39-80	2nd Prize
Lady Sophie Scott	Dene Sundial ...	891	Sept. 7, 1919	Sept. 27	25	27	6	20	5	47	11 2	5	20-62	V. Good	Good	37-00	---	37-00	3rd Prize
A. Chester Beatty	Addington Begum	802	Jan. 21, 1920	Aug. 27	56	26	0	21	13	47	13 1	9	30-60	Fair	Fair	25-00	1-60	26-60	
Sir Wm. Cain, Bt.	Emblem's 4th Enchantress	910	Aug. 15, 1920	Sept. 10	42	24	8	19	14	44	6 2	3	20-28	V. Good	Good	35-00	20	35-20	H.C.

BUTTER TESTS—GUERNSEYS—Continued.

No. in Catalogue	Name of Animal	CHORNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Degrees
338	Princess of Caillioterie ...	2 47 p.m.	3 50 p.m.	63	60	57
342	Lizette of St. Catherine ...	2 40 "	3 10 "	30	60	56
343	Masher Girl of the Marais ...	3 34 "	4 12 "	38	61	58
344	Rowanberry of Goodnestone ...	2 40 "	3 12 "	32	60	54
345	Donita of Les Grantes ...	3 32 "	3 47 "	15	60	51
346	Florrie 2nd of the Breque ...	2 40 "	3 22 "	42	60	51
347	Myrtle Lady 2nd of Newgrove ...	2 40 "	3 20 "	40	60	52
348	Dene Sundial ...	3 15 "	3 55 "	40	60	56
351	Addington Begum 4th ...	3 43 "	4 30 "	57	61	57
358	Emblem's Enchantress ...	3 30 "	4 0 "	57	60	56

BUTTER TESTS—JERSEYS.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield in 24 hrs.	Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation.	Total Number of Points	Awards
									Colour	Quality				
The Earl of Strafford	Missanabie ...	lbs. 824	May 2, 1915	1923. May 7	168	25 12	1 9 $\frac{1}{2}$	16.15	Good	V. Good	25.75	12.00	37.75	Certificate of Merit
Col. L. Gisborne, C.M.G.	Duchess of Aldan	722	June 6, 1914	Oct. 6	16	29 5	1 9 $\frac{1}{2}$	18.39	Good	V. Good	25.50	—	25.50	—
Col. L. Gisborne, C.M.G.	Thyme ...	876	Jan. 5, 1920	July 2	112	40 12	2 0 $\frac{1}{2}$	20.21	Good	V. Good	32.25	7.10	39.35	Certificate of Merit
Mrs. H. Briggs	Negundo ...	868	Jan. 13, 1917	Mar. 16	220	44 5	2 5	19.16	Good	V. Good	37.00	12.00	49.00	1st Prize
Mrs. H. Briggs	Lily of the Valley	900	Oct. 26, 1917	April 25	180	33 7	2 0	16.71	Pale	Good	32.00	12.00	44.00	Certificate of Merit
Pierpont Morgan	Posy ...	834	May 15, 1920	May 15	160	26 0	1 2 $\frac{1}{2}$	22.48	V. Pale	Fair	18.50	11.90	30.40	Certificate of Merit
Pierpont Morgan	Portia 2nd ...	842	April 22, 1920	June 6	138	28 13	1 7 $\frac{1}{2}$	19.41	Pale	Good	23.75	9.70	33.45	Certificate of Merit
Radhurst Farms	Eminent's Claire 17th	946	July 16, 1916	May 23	152	24 8	1 0 $\frac{1}{2}$	23.75	Pale	Good	16.50	11.10	27.60	Certificate of Merit
H. N. Roberts	Weybeard's Fanny	806	Oct. 27, 1919	July 31	83	25 2	1 14	13.40	V. Pale	Good	30.00	4.20	34.20	Certificate of Merit
H. N. Roberts	Duchess of Carita 4th	938	Mar. 8, 1920	June 15	129	24 0	1 2 $\frac{1}{2}$	20.75	Good	V. Good	18.25	8.80	27.05	Certificate of Merit
E. Tubbs	Oxlip ...	774	July 23, 1919	Mar. 13	223	39 12	1 13	21.93	Good	V. Good	29.00	12.00	41.00	Certificate of Merit
M. Henderson	Gloria June	896	June 13, 1919	May 17	168	24 13	1 8 $\frac{1}{2}$	16.37	Ex.	Ex.	24.25	11.70	35.95	Certificate of Merit
V. Doughty	Choir Mistress	802	July 29, 1919	July 6,	108	37 4	1 13 $\frac{1}{2}$	20.20	Good	V. Good	29.25	6.70	35.95	Certificate of Merit

BUTTER TESTS—JERSEYS—Continued.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield in 24 hrs.	Butter Yield	Ratio, viz., Butter Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards.
									Colour	Quality				
Mrs. Hayes	Fontaine's Lilac	lbs. 794	Feb. 12, 1920	1923. Aug. 20	63	38 4	1 14 $\frac{1}{2}$	19.90	Pale	V. Good	30.75	2.20	32.95	Certificate of Merit
Mrs. Ames ...	You'll Do's Triumph	818	Feb. 24, 1916	July 6,	108	32 2	2 2	15.11	Good	Ex.	34.00	6.70	40.70	Certificate of Merit
R. Bruce Ward ...	Evergreen ...	882	Sept. 4, 1916	May 11	164	34 13	2 1	16.87	V. Good	V. Good	33.00	12.00	45.00	3rd Prize
R. Bruce Ward ...	Princess Marigold	800	April 26, 1920	June 15	129	30 10	1 15	15.80	Good	V. Good	31.00	8.80	39.80	Certificate of Merit
The Earl of Strafford	Lettie ...	767	April 7, 1921	June 2	142	28 4	1 10 $\frac{1}{2}$	17.21	Good	V. Good	26.25	10.10	36.35	Certificate of Merit
Grosvenor Berry	Golden Raspberry	784	Dec. 27, 1920	Feb. 16	248	27 0	2 1	13.09	Good	Ex.	33.00	12.00	45.00	2nd Prize
Grosvenor Berry	Blackie ...	768	April 8, 1921	July 29	85	29 13	1 5 $\frac{1}{2}$	22.44	Pale	Good	21.25	4.40	25.65	
R. Bruce Ward ...	Golden Madeira...	804	Mar. 16, 1921	Mar. 25	211	29 4	1 14 $\frac{1}{2}$	15.34	Good	Ex.	30.50	12.00	42.50	Certificate of Merit
W. V. Doughty ...	Ickleford Three...	766	Dec. 24, 1920	July 2	112	24 2	1 21	20.58	Pale	Good	18.50	7.10	25.60	
Col. L. Gisborne, C.M.G.	Lingen Lass ...	700	May 28, 1921	June 29	115	27 13	1 8 $\frac{1}{2}$	18.35	Pale	V. Good	24.25	7.40	31.65	Certificate of Merit
Mrs. Ames ...	Xenia of Castillo	818	May 6, 1921	July 3	111	22 8	1 2 $\frac{1}{2}$	19.20	Pale	Good	18.75	7.00	25.75	
R. Bruce Ward ...	Moana's Opal ...	726	Oct. 15, 1920	May 19	156	26 7	1 3 $\frac{1}{2}$	21.97	Good	Good	19.25	11.50	30.75	Certificate of Merit

BUTTER TESTS—JERSEYS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				Temperature	
		Time		Duration of Churning Minutes	Dairy Degrees	Cream and Churn Degrees	Buttermilk, when churning finished Degrees
		Churning began	Churning finished				
370	Misanable	9 0 a.m.	10 4 a.m.	64	58	52	54
371	Duchess of Aldan	8 56 "	9 25 "	29	58	52	55
372	Thyme	9 5 "	9 29 "	24	58	52	55
373	Negrundo	9 8 "	9 45 "	37	58	52	56
374	Lily of the Valley	9 14 "	9 52 "	38	59	52	55
375	Posy	9 18 "	9 53 "	35	59	52	55
376	Portia 2nd	9 23 "	10 0 "	37	60	52	56
382	Eminent's Claire 17th	9 36 "	10 15 "	39	60	52	55
385	Weybeard's Fanny	9 42 "	10 20 "	38	60	52	56
389	Duchess of Carita 4th	10 7 "	10 43 "	36	60	52	56
391	Oxlip	10 24 "	11 18 "	44	60	52	58
394	Gloria June	10 25 "	11 0 "	35	60	52	56
397	Choir Mistress	10 30 "	11 10 "	48	60	52	56
399	Fontaine's Lilac	10 35 "	11 46 "	71	60	52	57
402	You'll Do's Triumph	11 25 "	12 47 p.m.	82	60	52	57
407	Evergreen	10 38 "	11 12 a.m.	34	60	32	54
408	Princess Marigold	10 42 "	11 38 "	56	60	52	56
412	Letitia	10 53 "	11 39 "	46	60	52	57
413	Golden Raspberry	11 15 "	12 55 p.m.	100	60	52	58
414	Blackie	11 32 "	12 10 "	38	60	52	57
420	Golden Madeira	11 43 "	12 12 "	29	60	52	56
423	Ickleford Three	11 45 "	12 18 "	33	60	52	57
424	Lingen Lass	11 57 "	12 35 "	38	61	52	57
432	Xenia of Castille	12 2 p.m.	12 50 "	48	61	52	57
443	Monna's Opal	12 22 "	12 51 "	29	61	52	56

BUTTER TESTS—OTHER BREEDS.

Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter	No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards	
						Milk Yield										
						Morn.	Even.	Total								
1923.																
THE DEVON		lbs.														
	er Hunt ...	Netton Lily	1711	Mar. 1, 1914	Sept. 24	28-28	5-27	11-56	0-2	9	21-85	V.G.	Soft	41-00	41-00	£3 Prize
	er Hunt ...	Pinkie	1462	Feb. 10, 1917	Sept. 25	27-23	10-18	13-42	7-2	2	19-97	Good	Good	34-00	34-00	H.C.
	ge Banbury	Milkaway	1649	Dec. 30, 1917	Aug. 30	53-24	5-22	6-46	11-1	15	24-09	Good	Fair	31-00	1-30-32-30	
DEVON.																
	. Lupton ...	Compton Handsome	1276	Jan. 16, 1912	Oct. 7	15-28	14-27	0-55	14-2	6	23-52	Pale	Good	38-00	38-00	£3 Prize
	. Lupton ...	Wynford Molly	1300	Jan. 16, 1913	Aug. 28	55-29	11-25	3-54	14-2	14	26-20	Pale	Fair	33-50	1-50-35-00	£2 Prize
	. Chick ...	Compton Dint 2nd	1134	Dec. 19, 1916	Sept. 19	33-20	5-16	14-37	3-1	13	20-51	V.P.	Fair	29-00	29-00	
	. Chick ...	Lovely 4th	1279	May 5, 1918	Aug. 16	67-21	3-20	5-41	8-1	13	22-32	Pale	Soft	29-75	2-70-32-45	H.C.
	Chick ...	Wynford Quince	1366	Feb. 6, 1919	Sept. 16	36-17	8-13	11-31	3-1	6	22-68	Good	Soft	22-00	22-00	

BUTTER TESTS—OTHER BREEDS—Continued.

Biller	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total No. of Points	Awards										
						Morn.	Even.	Total			Colour	Quality														
		lbs.				lbs ozs	lbs ozs	lbs ozs	lbs ozs																	
ERY.				1923.																						
	W. Grant-Morden	Cowslip of Carton	880	Sept. 26, 1919	Sept. 21	31	22	0	19	13	41	13	1	23	46	Fair	Soft	29	00	29	00	H.C.				
	W. Grant-Morden	Jill of Carton	996	May 2, 1919	1922, April 8, 1923.	562	13	0	10	14	23	14	1	41	18	63	Fair	Soft	20	50	12	00	32	50	£2 Prize and Bronze Medal	
	de B. F. a-Collhurst	Castledough Maid 3rd	855	Mar. 17, 1913	Sept. 30	22	20	11	19	13	40	8	1	3	34	10	Pale	Good	19	00	19	00	19	00	H.C.	
	de B. F. a-Collhurst	Castledough Connie	973	Mar. 19, 1916	Feb.	525	12	13	12	8	25	5	1	1	23	42	Fair	Fair	17	25	12	00	29	25	H.C.	
	hical Great & Ireland	Buckhurst Bubbles	878	July 15, 1915	Aug. 19	64	19	10	1	36	13	1	8	24	54	Fair	Fair	24	00	24	00	24	00	24	00	H.C.
	a.	Flora of Carton ...	954	Mar. 23, 1917	Sept. 19	33	29	0	23	5	52	5	2	41	22	93	Fair	Fair	36	50	36	50	36	50	£3 and Gold Medal	
	son-Milne Zambara C.	Wadlands Buttermilker	837	1912	June 16	128	24	8	20	14	45	6	1	10	27	14	Fair	Good	26	75	8	80	35	55	35	55	£2 and Silver Medal

BUTTER TESTS—OTHER BREEDS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE					
		Time		Temperature			
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn	Buttermilk, when churning finished
				Minutes	Degrees	Degrees	Degrees
232	Netton Lily	2 40 p.m.	2 58 p.m.	18	60	52	54
233	Pinkie	2 39 "	3 15 "	36	60	52	56
235	Milkaway	2 45 "	3 55 "	70	60	52	60
237	Compton Handsome	3 25 "	4 15 "	50	60	52	56
238	Wynford Molly	2 37 "	3 8 "	31	60	52	56
239	Compton Dint 2nd	2 40 "	3 37 "	57	60	52	57
240	Lovely 4th	2 50 "	3 15 "	25	60	52	56
241	Wynford Quince	2 37 "	3 28 "	51	60	52	58
450	Cowslip of Carton	3 37 "	4 3 "	26	61	52	56
451	Jill of Carton	3 17 "	4 3 "	46	60	52	58
452	Castlelough Maid 3rd	4 7 "	6 0 "	113	60	52	60
453	Castlelough Connie	3 41 "	4 15 "	34	61	52	56
457	Buckhurst Bubbles	3 21 "	4 17 "	56	60	52	56
464	Flora of Carton	5 0 "	5 39 "	39	61	52	57
466	Wadlands Buttermilker	5 5 "	6 17 "	72	61	52	60
479	La Mancha Madeline	4 48 "	5 40 "	52	61	52	59
482	Fillongley Favourite	4 58 "	5 54 "	56	61	52	57
483	Fillongley Farola	5 5 "	6 10 "	65	61	52	62
484	Fillongley Forest Fawn	5 10 "	5 57 "	47	61	52	60
487	Brokenhurst Pansy	5 13 "	6 30 "	77	61	52	58
488	Fillongley Forest Flower	4 47 "	5 20 "	33	61	52	58
489	Fillongley Forest Footprint	5 0 "	5 55 "	55	61	52	58
491	Brashfield Black Tulip	4 57 "	5 45 "	48	61	52	58

NEW INVENTIONS AT THE DAIRY SHOW, 1923.

By WILLIAM BURKITT, B.Sc., F.H.A.S., N.D.D.

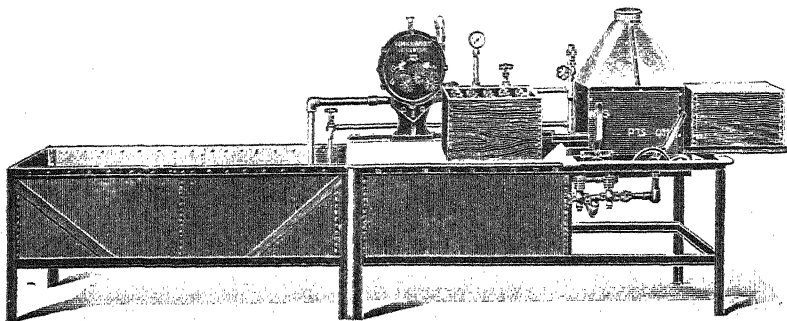
WHILST year by year, even in war time, inventors of dairying appliances have never ceased their efforts, it is but natural that the tide of inventive genius rises and falls, and it is gratifying to be able to say that if 1923 is not "high tide," at all events it has flowed freely and the display of new inventions has been much over the average.

Thirty-seven entries of new appliances were made, and thirty-five actually competed for the medals - with such success that seven silver medals were awarded and eight bronze medals.

Following the order of the catalogue for convenience, and taking the winners of the silver medals first, we commence with the Steam-driven Bottle Washing Machine, shown by Vipan & Headley, of Abbey Gate, Leicester. Here we have a machine, fairly low priced, and of a reasonable size, capable of washing 1,000 bottles per hour with a full staff of men, the price being £75. The bottles are first thoroughly soaked in a soaking tank, then turned upside down to drain, being held in their crates by a retaining plate. Having drained, the retaining plate is removed, and the bottles quickly cleaned by being thrust on to two revolving brushes, an intermediate brush cleaning the outsides of the bottles.

Having been replaced in the crates and the retainer replaced, the case is again inverted and placed over a jet plate which has a canopy over; here a lever first of all admits clean water into the bottles, and then, when reversed, live steam, which effectually sterilises them, completing the operation.

Either pint or quart bottles can be washed, by means of a simple lever adjustment of the jets, and the bottles remain in the crates throughout except for the brushing out process.

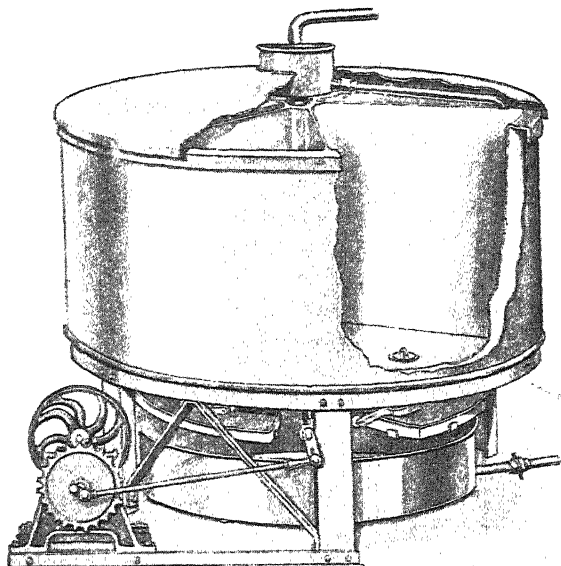


Steam-driven Bottle Washing Machine.

A Silver Medal was awarded to the Dairy Outfit Co., Ltd., of Pentonville Road, King's Cross, London, N., for their 300-gallon capacity Standard Positive Retarder, price £250; this plant being a circular holding vat, divided into six segmental compartments holding 50 gallons each, filled from a slowly revolving hopper on top which passes over each compartment in turn to fill it, and therefore no milk is admitted except to that compartment in its proper turn.

At the end of 30 minutes the milk is released by a valve at the bottom of the compartment, which is actuated by a cam connected with a spindle, which is part of the revolving feeding hopper before mentioned. No milk can pass away therefore except from the one compartment, which is emptied in about three minutes, the milk then being pumped up to the cooler.

About one-eighth horse power works the retarder, which is of course insulated on its outer surface. The milk is admitted at the sides to prevent frothing, and the emptying valves are easily removed for cleaning; altogether it is a well thought out appliance.



Standard Positive Retarder.

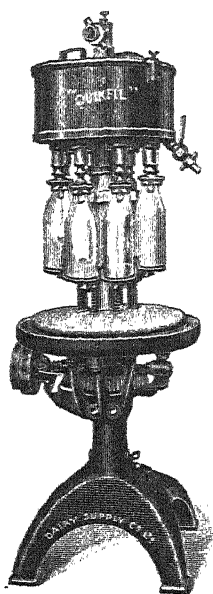
The Dairy Supply Co., Ltd., Museum Street, London, W.C.1, gained the third Silver Medal for their Automatic Eight-measure Bottle Filling Machine, with which, for a cost of £130, two hundred dozen pint or 1,200 quart bottles can be filled per hour.

This machine demanded attention from its compactness and from the fact that it had been passed by the Weights and Measures Department.

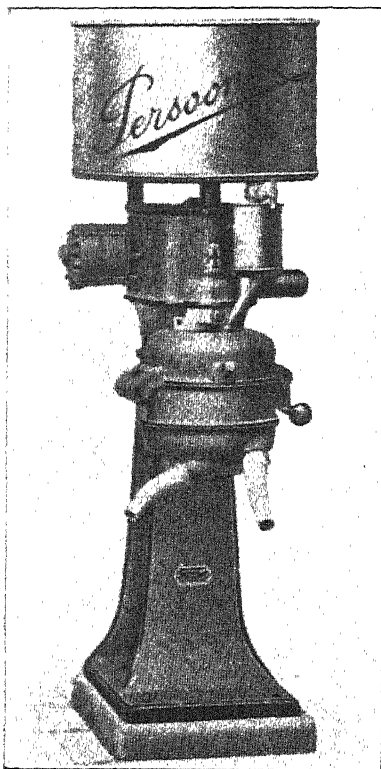
On top we have a milk container, with a tinned copper float to

measures, reducible to pints or half-pints if necessary by displacement pieces; these measures have specially designed metal-to-metal drip proof nozzles at their lower ends, fitting into either disc or sterilized milk bottles.

Amongst the advantages claimed for this filler are that it has no rubber valves, it is an accurate measurer, drip proof, very quickly adjustable from the quart to lesser sizes, and, finally, that it is easily cleaned.



Automatic Eight-measure
Bottle Filling Machine.



"Persoon's" Cream Separator.

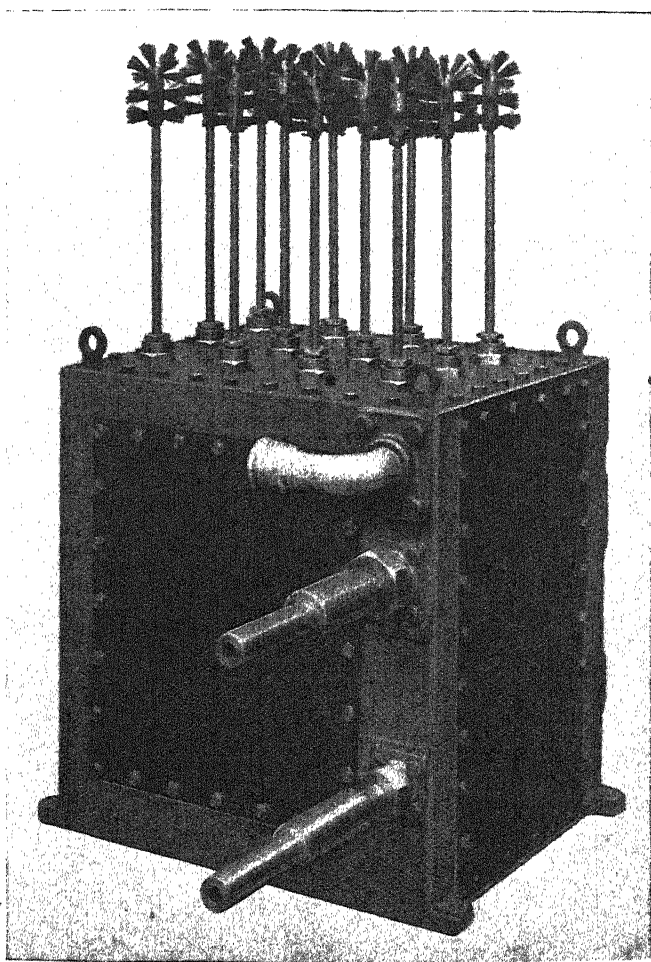
Messrs. Cox & Sons, Northwold Buildings, Stoke Newington, London, N.16, received a Silver Medal for their "Persoon's" Cream Separator, with an electric motor driving directly on to gearing of the separator by a small pinion, no chain or belt being necessary. No starter is needed, the motor being ingeniously wound to obviate this; the current when switched on is taken up in series, the separator gaining its full speed in about a minute, the current being fed from three points whilst starting, and from two points in ordinary running, the power costs about 1d. per hour. Lubrication is effected by oil

plates or discs, but having a wing-fitting very easily removable for cleaning purposes.

The capacity is modifiable from 95 to 140 gallons per hour by a simple changing of the bowl and funnel.

Generally speaking, this seemed a compact and efficient separator.

Once more a Silver Medal is awarded to A. Grabham & Co., of 139, Englefield Road, London, N.1, for a modification of their "Super Dreadnought" Bottle Washer, revolving brushes having been introduced with hollow spindles which act as jets, through which a small



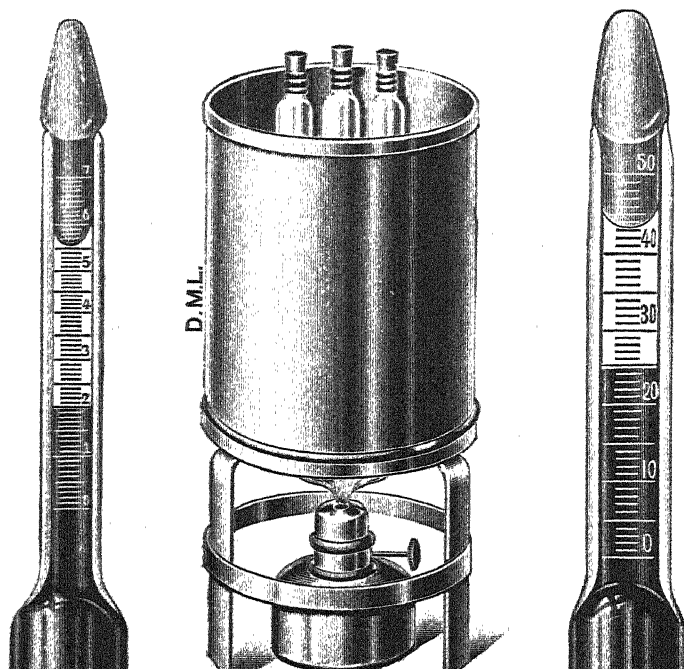
centrifugal pump forces boiling water and soda into the bottles as they are being brushed, thus giving more effective cleansing, which is completed by a clean hot water washing and steam sterilization. The price is £85.

Year after year Messrs. Sutherland, Thomson & Co., of 31, Tooley Street, London, S.E.1. submit a number of new inventions for competition and almost invariably win the approval of the judges, their record being maintained this year by winning three medals, one Silver and two Bronze, which may, for convenience, be considered together.

The Silver Medal was awarded for a new method of testing milk and cream for fat (price 20s.). This, in distinction to the Gerber test, needs no centrifugal power, and can be used for cream also; two special or proprietary chemical solutions known as A and B, and originated by Dr. Høyberg, a Danish veterinary surgeon, are used in the test.

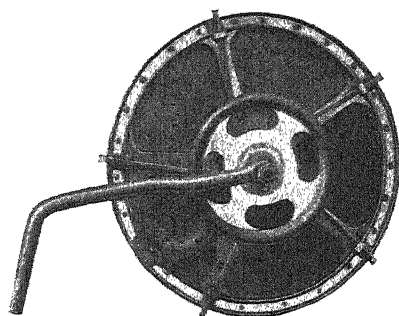
The outfit is small, consisting of three pipettes, the liquids A and B, and a small bath with lamp, which uses hot water, being raised to 160 to 200 degrees Fahr.

The test is completed in under 20 minutes: gives a clearer fat and no deposit; no acid is required: the liquids are non-corrosive; and 800 tests can be done for 5s. with Liquid A.



The test is worked as follows :—9·7 c.c. of milk, 3·4 c.c. of the liquid A and 1 c.c. of the liquid B added, the tube is corked and shaken for about a minute, then placed in a metal holder, heated in the tank for six minutes to about 160 degrees, removed, shaken, reheated for seven minutes, when the fat can be read off.

Messrs. Sutherland, Thomson's first Bronze Medal was gained by an Automatic Ventilator Adjustment for Butter Churns, this invention of Mr. Ewing allowing the gases generated in the act of churning to pass through perforations in a double cup or sleeve leading through an upright tube within and at the side of the churn, and from thence through the hollow spindle or axle into the open air; the gases, which if not liberated cause sleepy cream and loss of time, are thus set free automatically without the use of a spring ventilator as hitherto. Whilst the idea is new in its present form, it is by no means perfect, the admission of metal into the churn being a drawback. However, a Bronze Medal was awarded, and the invention if further improved will doubtless compete at some future Dairy Show for a Silver Medal, when a report on its practical use and success would be strong evidence in its favour.

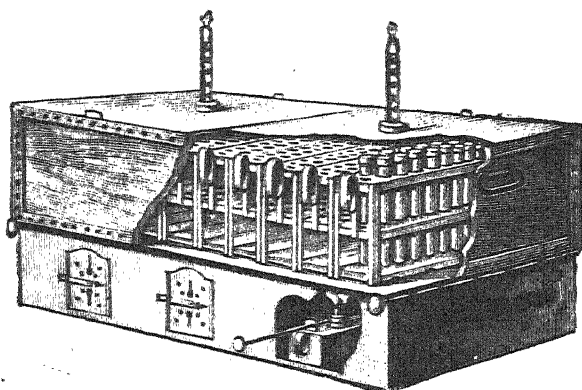


Automatic Ventilator.

The other Bronze Medal won by this Stand was for an Improved Method of Testing Milk for Impurities (price £4). With this method it is claimed that a satisfactory test can be effected by an operator without previous laboratory training.

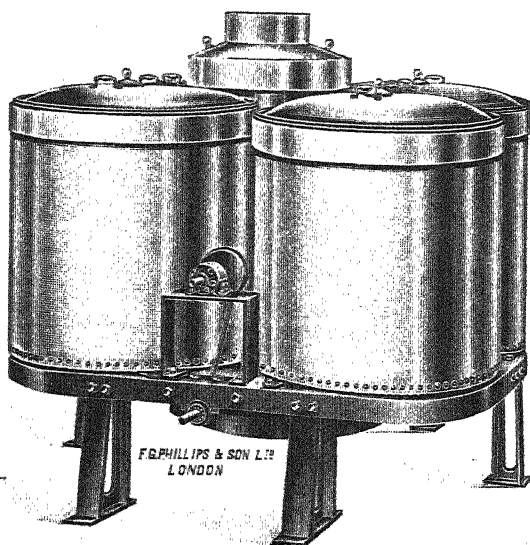
To each tube of the milk to be tested, 1 c.c. of a methylene blue solution is added. The tubes are then placed in a special tank and kept at a temperature of 101° Fahr. If the milk is very unclean the blue colour disappears in 20 minutes. On the other hand, in a very clean sample the colour does not disappear till 5½ hours have elapsed.

The tubes are left in till 24 hours have elapsed so as to discover the type of fermentation, *e.g.*, a gassy curd showing the presence of *Bacillus coli commune*.



Apparatus for 100 Tests.

The last Silver Medal was awarded to F. G. Phillips & Son, Goodwin Street, Finsbury Park, London, N.4, for their "Positive Holder" Retarder. Here we have four circular tanks or holders, each of 125



gallon capacity set in a square. These are fed by a central circular milk receiver, delivering the milk into a four-chamber tray, and from thence to each container successively.

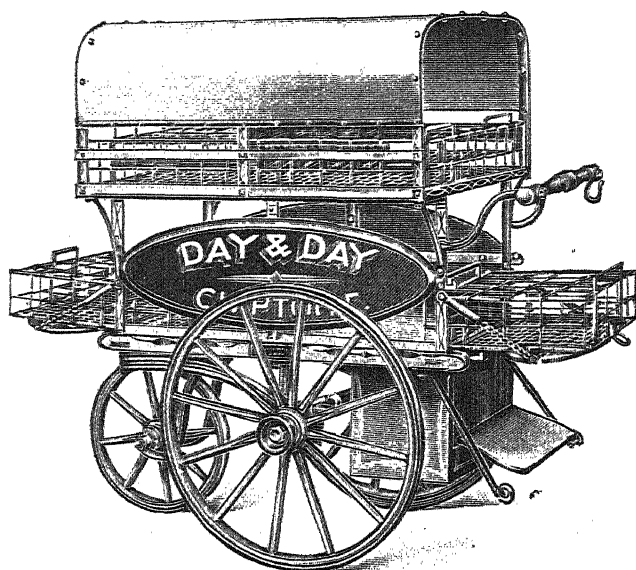
At the bottom of each holder is a metal valve actuated by a revolving arm, working in conjunction with the feed at the top, so that the valve is opened and the milk flows out just prior to the filler coming into action, the action being thus automatic and alternate.

To ensure the full 30 minutes holding, the milk cannot pass on to the receiving tank till the shoot attached to the rotating arm is in line with the outlet pipe, any drips being conveyed elsewhere.

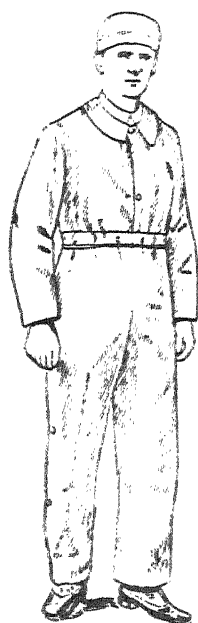
The mechanism is actuated by a small one-eighth h.p. reduction gear working through a cam on a horizontal shaft to the vertical shaft.

The remaining Bronze Medals were awarded as follows :—

To Messrs. Day & Day, Clapton, London, E.5, for their Improved Pram for the delivery of Bottled Milk. This is a light hand-car or pram, price with crates, £32, which will carry 25 gallons, *i.e.*, 45 quart and 110 pint bottles, or 120 quarts, fixed in wire crates, easily accessible having falling ends on the pram, so that the crates may come out. The pram has ball-bearing axles, a cover over the top for hot weather, and is very light running and well finished, and is a practical proposition for hand delivery in a fairly level district.



With his easily adjustable one-piece "Vanchie" Overall for Milkers, Inc., Mr. A. J. Clark, the Dairy Cloth specialist, of Wells, Somerset, won a Bronze Medal. To an ordinary coat overall is attached a trouser or leg piece, which when lifted up is fastened by tapes at the waist, and by press buttons on the outer sides of the legs, like a motor

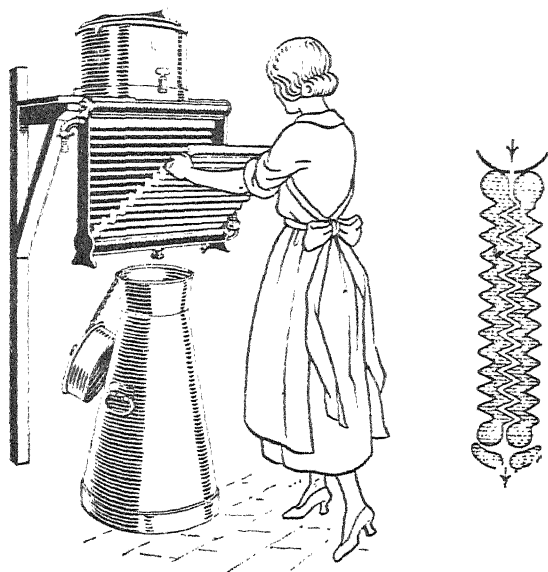


"Vanchie" One-piece Milker's Overall.

cyclist's outfit. When in wear it looks like an ordinary boilermaker's overall, but the difference being that the boots do not have to be pushed through the trouser legs, a decided advantage on a farm where dirt, mud or dung may have been encountered. The suit can be put on in 30 seconds, and costs from 12s. 6d. to 16s. 6d., according to quality.

The De Laval Chadburn Co., Ltd., Wellington House, Buckingham Gate, London, S.W.1, were awarded a Bronze Medal for an Internal "Easy Clean" Cooler or Refrigerator for Milk. In this we have the milk passing down in the centre away from any dust or current of warm air, between two fluted coolers, which fit one into the other, of the usual type, with water or other cooling medium passing up through them. It is claimed the cooler acts more quickly as the milk is cooled

on two sides, and the front section is easily unhinged and removable for cleaning purposes.



Internal "Easy Clean" Cooler or Refrigerator for Milk.

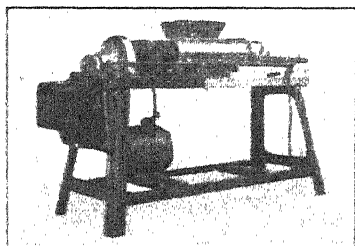
With their curious Dachshund looking patent Combined Milkstool Pail, Captains E. & A. Carlton, of the Manor Farm, South Marston, Swindon, won a Bronze Medal. The milker seats himself astride of a can something like an elliptical railway milk churn of small four-gallon size, with two legs at the smaller end tilting it upwards, and with an upturned mouth with metal sieve and cotton wool filter for



the milk to pass through. When tested in the Hall it worked well, seemed handy, and the milk was not splashed or wasted. The price is 35s., and it was claimed one cotton-wool disc would serve for seven cows.

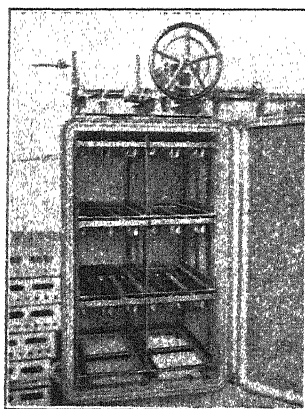
Mr. B. J. Fry, 7, South Walk, Dorchester, showed an Improved Butter-moulding Machine, which received a Bronze Medal. This was seen at work by the kind permission of Messrs. A. Stapleton & Sons, Ltd., at Stoke Newington. This machine turns out rolls or bricks of butter of any desired weight, without hand manipulation, and it is useful for working up hard boxed butter of factory origin.

It is worked by a $1\frac{1}{2}$ h.p. motor; the mould makes four half-pound bricks at a time; it has an aluminium case; there is no waste of butter; and it is claimed the grain is not spoilt. The feeding worm is free for cleansing purposes.



Improved Butter Moulding Machine.

The last of the Bronze Medals was awarded to C. D. Gabell & Co., 104, Albion Road, London, N., for their Milk Sterilizer, priced at £225. This is an oven which sterilizes 300 pint bottles at one operation,



Milk Sterilizer

and also completes the bottle-sealing operation whilst in the oven, by means of specially designed arms or triggers of phosphor bronze actuated by a simple gearing on the oven top. A guide plate holds the bottles in position whilst they are being sealed, and the triggers, guides, &c., are easily adjustable and removable. After sterilization and closing the bottles pass on to a shallow cooling tank.

Other than the medal winners, attention may be called to the Milking Can or Pail shown by W. H. Smith & Co. (Whitchurch), Ltd. With a better adjustment of the filtering cloth on top of this pail so as to prevent splashing, this may prove to be the best hygienic pail on the market, having the advantage for milking of a wide mouth, which does not admit air or dirt through the presence of the cloth.

THE POULTRY SECTION.

By R. FARRAND HARRISDALE, F.Z.S.

There is something different about the Poultry section of the Dairy Show to that of any other Poultry section of any other great Agricultural Society or any other Poultry Show. It is the social side, for in addition to seeing each year at the Dairy Show some of the finest poultry in the world, one always meets the greatest number of big breeders here and each one is keen to unfold the wonders of the past breeding season, for this is the first great event of the winter season where all can meet: then, again, the Poultry Club dinner on the first evening of the Dairy Show is now an established annual fixture, and the annual dinner of the National Utility Poultry Society on the evening of the second day is also another annual fixture, and both these events bring many poultry keepers to London and they all meet at the Dairy Show, so that Dairy Show week has not only established a great show of poultry in London, but it has established a great show of poultry breeders, and this annual gathering is now looked forward to year by year, and many happy tea parties take place in the Agricultural Hall during Dairy Show week.

Another great entry and another great triumph marks steady progress of our Poultry section: space is still limited and many entries had to be returned, and this shows the danger of delay in entering for the Dairy Show. Many exhibitors, learning by experience, now enter at once upon receiving their schedule, and that promptness is not only a great help to the management but it ensures the exhibitor having his entries accepted and so avoids disappointment on his side.

Many Judges suggested larger classification for their different sections, but with limited space at their disposal the Committee of the Poultry section must limit the classification, therefore, only the most popular classes can be included in the schedule. Only three classes were cancelled in this section this year, the Indian Runner Drake, Fawn and White, bred 1923; the Indian Runner Duck, Fawn and White, bred in 1923; and the class provided for White Rosecomb Bantams.

The two largest classes in the Show were the two classes provided for Light Sussex with 73 cockerels and 120 pullets, making a total entry in the two classes of 193, which shows the great popularity of this breed to-day, but the single-combed Rhode Island Reds made a good second for the most entries in any two classes with 90 cockerels and 99 pullets, making a total entry of 189 entries in the two classes.

As usual at this event of recent years the prize for the best bird in the Show went to the winning White Wyandotte cockerel, a bird of great merit and beautifully shown by that expert showman, Mr. H. S. Anthony, this bird being sold at the auction for £35, but Mr. J. C. Warren's winning Black Orpington cockerel made more money at the auction, for after spirited bidding he was knocked down at £39.

These were the two largest figures made at the sales, but as usual at this event many birds changed hands at smaller figures, and many birds in the selling classes found new owners, this show being early in the season the exhibitor is always looking round here to buy chickens for the later shows which often prove good investments.

Mr. R. Kirk is again to be congratulated on the splendid way in which he superintended the arrangement of the poultry pens, and Messrs. Spratts Patent, Ltd., for the splendid way in which they did the penning, and the new arrangement of the penning of the Bantam section was greatly appreciated by the Judges and the Exhibitors, and they both expressed very warmly their great appreciation of this new arrangement.

The Table Poultry showed a very increased entry on last year, and the Cup winners in this section were a very fine pair of Indian Game and Light Sussex first cross, which is evidently a splendid cross for table.

The Eggs also proved to be very strong classes, in fact, both the Table Poultry and the Eggs were the best ever seen at the Dairy Show, which proves that Poultry Farming at the moment is a progressive industry, and that not only quality but quantity of produce in this section is improving, and showing the public that England can still produce the best in this line.

Dorkings, with less entries than last year, made a nice show, and the Dark cockerels were a capital class, the winner standing right away. The Silvers, as a whole, were not so forward nor so good in quality.

Croad Langshans made a splendid show, the pullet class being very strong and many cardless birds here could win smaller shows. The cockerels were not such an even lot, but the winners were well selected; the judge in this breed handled all the exhibits.

Brahmas had two classes which only contained twenty-two birds, and no doubt the small entry was largely due to the Darks and Lights having to compete in the same class; it would be much better in future to divide them; in each class this year good Lights won.

Cochins, another breed that is out of fashion at the moment, had a small entry, only twenty in two classes, one more than last year, the winning White cockerel took the medal for the best Brahma or Cochin. A Partridge cockerel won the next class, he being very fit and forward.

Sussex as a section were a splendid lot, and no breed of recent years has made the rapid headway and caught the public eye like the *Sussex*, especially the Lights, which here made quite a show in their own classes. The winners were well selected and the exhibitors seemed satisfied. The Reds were very strong classes and the cockerels were a nice forward lot, and either of the first two pullets could have won, they were both typical and good colour. The Speckled and the Brown as a whole had less entries than last year, so they do not seem so popular as the Lights and Reds which are both making tremendous headway to-day.

Faverolles do not seem to make much headway, and the two classes provided for them only contained twenty-five birds, the cockerels being by far the stronger class for quality.

Wyandottes, as usual here, were a popular section which was well supported. The Whites in this section had the largest entry; the winners excelled in shape, colour, size and head points. The great feature was the uniform quality of the exhibits. The Laced varieties seem at the moment to be having a revival, and this year many good Golds and Silvers were penned. Blacks were a good lot, and Columbians are coming along fast now. In the Any Other Colour classes Partridges took most of the prizes.

Orpingtons as a breed to-day do not seem to get the entry they used to get at the big shows, perhaps the good ones are in too few hands at the moment or the breed as a breed is not so popular as it used to be, in either case it is a pity, but now that Orpington breeders are paying more attention to Utility-points again we may see a revival of the breed. The Blacks contained some wonderful birds, and the winning cockerel made the top price at the auction. The Whites were strong classes, especially the pullet class. Buffs showed an increased entry on last year, but the quality was not so good as we have seen at this show in past years. The Blues were a nice lot and the principal breeders were represented.

Rhode Island Reds were a wonderful lot, for of late years they have improved so much in both shape and colour. The single-combed birds are still the most popular, and the winners in these classes took some selecting but were well placed at the finish.

Rosecombs were a smaller entry and on the whole not such a forward lot of chicken, but the winners were well developed birds and stood right away for type and colour.

Russian Orloffs seem to have had their day, and this year the entry was less than last year, only sixteen in two classes; a Mahogany won the cockerels and a Spangle the pullets.

Anconas were two strong classes and well up to their usual standard in both cockerels and pullets, and improved mottling was noticeable.

Frizzles showed an increased entry on last year and the quality was on the whole better; this breed still maintains its good laying qualities.

Old English Game were well judged and the awards seemed to give general satisfaction, the winning pullet in the Any Other Colour taking the Silver Medal.

Minorcas had an increased entry on last year and were very well judged; at the moment Minorca men are getting back to a more moderate type of bird showing stronger utility properties; the winners in both classes were typical nice-headed good-coloured birds.

Andalusians were the two best classes of this variety seen here for some years, the winners in each class being very typical birds, the cockerel standing second reserve for the best bird in the Show.

Leghorns as a whole were a strong section, the Whites being extra good. Browns were a nice level lot. the Blacks were strong classes

especially the pullets, the Exchequers came up well in entries, and the winning Buff cockerel in the Any Other Colour class was a beauty. The Pullet class being headed by a nice Blue followed by a Duckwing and a typical Pile.

Plymouth Rocks were strong classes, the Barred receiving as usual the largest entry, the cockerels taken on the whole were not quite so forward, but the type and quality was good. The Barred pullets were very good, in fact, the best seen here for some years, and any of the first five was good enough to win, so close was the competition. The Buffs have made great headway and were good in both numbers and quality, the winning cockerel being claimed at £25, which speaks for their coming popularity. Whites took the principal prizes in the Any Other Colour classes.

Sicilian Buttercups, with only twenty-seven entries, against forty entries last year, show that the breed is not gaining favour with breeders.

*Silkie*s maintain their popularity and their quaintness appeals to many, together with their good laying and broody qualities.

The cockerels were not so good as the pullets, some being inclined to be leggy. Remember *Silkie*s are not Bantams and cannot compete in Bantam classes, but are the smallest variety of big fowls.

Indian Game of the older varieties still maintain their popularity, and the classes this year were well filled with wonderful quality birds, the winners as usual in this variety being bred in the West country.

Redcaps are not seen much out of Derbyshire, and the two classes provided for them had a very poor entry, only fourteen against twenty-five last year.

Campines on the other hand came up splendidly, the Silvers as usual getting the larger entry, but they lacked that nice green sheen on the black that we used to see in this colour, and the neck hackles which should be clear white were in many cases either ticked or striped. In Golds the cockerels were the better class and the cutting and barring was far in advance of the Silvers, the sheen in the Golds was good and the type better than the Silvers.

The *Any Other Variety* Classes are always interesting at this Show, and this year they included Barnevelders, Black Sumatra Game, La Bresse, Black Marias, Buff Sussex, White Dorkings, Rhode Island Whites, Houdans, Modern Game, Hamburgs, Scots Greys, Jersey Black Giants, Jubilee Indian Game, and White Crested Black Poland, truly a wonderful collection for variety; the winning cockerel was a beautiful Black Hamburg, and the winning pullet a lovely soft coloured Modern Duckwing Game.

Langshans had only 15 entries in both classes against 23 last year, the pullets were better than the cockerels, but the breed as a breed seems to be going back.

The *Selling Classes* for all the breeds contained many cheap birds and many found new owners, the winning White Wyandotte cockerel in the £3 Selling Class made £17 at the sale.

same class making £11, and the third making £8, which shows the continued popularity of the White Wyandotte.

The *Waterfowl* had an extended classification and a good entry. The Rouens were two exceptionally strong classes, the winning Duck taking the Silver medal over all varieties; she was without doubt the best seen for some years. Aylesburys had two strong classes and not a poor specimen, and they showed an increased entry on last year here. Buff Orpingtons came up in good numbers as one would expect such a wonderful egg-producing variety to do. Many of them failed in colour, but the winners were of nice even colour. Blue Orpingtons do not seem to make much headway, and the class only contained 10, the winner standing right away. Black East Indians were few, but the winners were extra good colour. The two *Any Other Variety Duck* Classes were well filled, showing an increase on last year's entries, and they contained the following varieties:—Crested, Cayuga, Khaki Campbell, Magpie, Penguin, Pekin and Mandarin. The Drakes were won by a lovely Cayuga, and the Ducks by a typical Khaki Campbell of lovely colour. The Indian Runners were numerous and excellent in both type and quality, the winning birds especially excelling in type.

Geese were a smaller entry than last year, and no doubt the heavy railway carriage on them keeps many away from a distance. The winning Toulouse took the medal and was claimed at catalogue price, £15 15s. Embdens made a poor show, only six turning up.

The *Turkeys* on the other hand made a great show and the entry was much better than last year. The quality was splendid and competition was very keen.

The *Bantam* section is always most interesting at this event, and the quality this year all through was well above the average. The Modern Game Bantams had eight classes and as usual the competition was very keen; many birds from Scotland did very well in this section, especially in the Black, Reds and Piles, the winning Pile cock taking the Silver medal which he well deserved. Old English Bantams had six classes provided for them and they contained a big entry, and the quality all round was good, the Judge giving preference to shape and fitness, which is advisable in this breed. Variety Bantams always make a great show here, the White Wyandottes being the two largest classes, this being a compliment to the Judge, who handled them well. Another year classes might be provided for Rhode Island Red Bantams as they seem rapidly to be coming to the front. Sebrights seem to be becoming very popular again, and the Silver hens were a grand lot. The Variety classes contained many good birds, a lovely Scots Grey cockerel winning the cocks, and a well-pencilled Dark Brahma hen winning the other class.

The Judges all through our section seemed to give great satisfaction and our thanks are due to them for their services.

Much of the success of the Poultry Section is also due to the untiring services rendered to it by its worthy chairman, Mr. S. Palgrave Page, J.P. What he has done for the Dairy Show during the last quarter

THE PIGEON SECTION.

By W. S. BROCKLEHURST.

THE forty-fifth Annual Show, held on October 23rd, 24th, 25th, and 26th, 1923, at the Royal Agricultural Hall, London, was again a great success. Though the entries were not quite so numerous as the last two years, the quality throughout was much better. The total number of entries for the last three years is as follows:—1921 had 3,272, the record Dairy entry in Pigeons; 1922 had 3,208, and 1923 had 3,115; ninety-three down on the previous year, and one hundred and fifty-seven down on the record Show of 1921.

The general quality of the birds shown has much improved and the competition getting keener every year now since the war makes the Judges' task a much harder one than in former years, and with the numbers and quality of the birds that face the Judges at the Dairy Show, they have no light morning task in awarding the prizes and special prizes.

Owing to the improvement that had been made in a section of the Poultry space, the birds were able to be better penned and lighted, and a rumour is going round the Pigeon Fancy that there is likely to be a great improvement in the space available for the Poultry and Pigeon departments for the 1924 Show—an improvement that will be greatly welcomed and appreciated by the Pigeon Fancier at large, as it is felt that it is a great pity that a grand display of good birds could not be staged better. It has been a source of trouble and worry for several years now, to the Pigeon Stewards, as to the best way to pen and stage the exhibits with such a limited space at their disposal, and although we hear several prominent exhibitors grumble each year as to the position their birds are staged in, we are much gratified to see them turn up year after year with more exhibits than ever. Nobody will welcome the suggested alteration and improvement in the spacing that will be available for the Pigeons at the 1924 Show more than the Committee and Stewards of that section.

The Pigeon Section is a very popular section with the general public, which is borne out by the numbers of people seen in the aisles during the week, enquiring and looking for the winners of the Society's Medals and different Cups offered by the British Dairy Farmers' Association and other Clubs for competition each year.

The winners of the principal trophies offered by the Association for competition this year are as follows:—

The Gold Medal offered by the Association for the best Pigeon in the Show bred in 1923, was awarded to Class 144, Pen 1644, Mr. W. S. Brocklehurst, Blue Gazzi Modena Cock. The Reserve to Class 31, Pen 366, Mr. E. H. Sikes, Blue Norwich Cropper Cock.

The Jones' Memorial Trophy for the best old bird in the Show was awarded to Class No. 2, Pen 39, Mr. W. Stevenson's White Fantail Hen. The Reserve was awarded to Class 193, Pen 2141, Mr. G. E. Hope's Blondinette Cock.

The Esquilant Challenge Trophy was awarded to Class 31, Pen 366, Mr. E. H. Sikes's Blue Norwich Cropper Cock, and the Reserve to Class 21, Pen 251, Mr. F. W. Miller's Blue Pigmy Pouter Hen.

The Fulton Trophy was awarded to Class 221, Pen 2425, Mr. John Douglas's Blue Chequer Show-Homer Hen, and the Reserve went to Class 229, Pen 2693, Messrs. Wilson and Southam's Racing Pigeon Hen.

All the above exhibitors are to be congratulated on having bred and shown a pigeon good enough to win and carry off one of the most coveted honours in the Pigeon Fancy. There are many good Fanciers who have bred a good bird year after year, and tried hard to win one of the above Association's big prizes, but have only just been beaten by a better bird. And still they try. We wish them the best of luck next Show.

Before going on to describe the varieties shown at this year's Dairy Show, I must again, on behalf of the Pigeon Fancy, say a few words of gratitude and thanks to the Chairman of the Dairy, Poultry and Pigeon Committee, Mr. S. Palgrave Page, who with his usual untiring energy and labour, in organising and carrying on the work in connection with this section as well as the Poultry department, for the benefit of all concerned, as well as the care and welfare of the exhibits under his charge during the Show, had no light task. All exhibitors and fanciers have much to thank the Chairman for, as it is only those who have the honour and privilege of working under his most courteous guidance who know of the great amount of work and time he puts into it. The thanks of every exhibitor are due to him. Now to the Varieties.

Fantails numbered 180 in 11 classes, an increase of 15 entries with the same number of classes as last year; a good improvement in number as well as quality. This being the second year in which two Judges have taken this section, it is found to be of great value in getting the work done in good time and all awards up before the public are admitted to the galleries. It was in this section that the Jones' Trophy winner was found, in Class 2, Pen 39, Mr. W. Stevenson's White Fantail Hen, a beautiful young pigeon, which also won the Association's Silver Medal for best Young Fantail in section. The Whites on the whole showed great improvement on last year's; Saddles were a very fine lot, and are improving very much; the winning Red Saddle is recognised as the best ever bred. The Blues and Silvers and other colours were a grand lot, and it was generally expressed that the quality throughout was of a very high standard this year.

Pouters numbered only 23 in 4 classes, as against 31 in 3 classes the previous year. What few exhibits were penned were of the very

finest quality, but it is a great pity that more birds are not seen of this very interesting breed at the Dairy Show.

Pigmy Pouters numbered 126 in 13 classes, a decrease of 20 on last year's total of 146 in the same number of classes. Here again the advantage of two Judges was very noticeable, as this is another variety that requires much pains and work to make the awards, when every exhibit has to be handled in a walking pen. The Reserve for the Esquilant Trophy was found in Mr. F. W. Miller's Blue Hen, a beautiful young pigeon. In fact, the quality of the exhibits generally seemed in advance of the last few years all through this section, Mr. B. O. Dickinson winning the Challenge Cup for best Blue Silver or Cream with a grand young Blue Cock, and Mr. H. N. Leighton the Challenge Cup for Any Other Colour with a Black Pied young Cock of great merit.

Norwich Croppers numbered 77 in 5 classes, a drop of 15 on last year's total in the same number of classes. The Blues have much improved, and should soon warrant a separate class for that colour. Mr. E. H. Sikes's exhibit in Class 31, Pen 366, a grand young Blue Cock, was awarded the Esquilant Trophy, and was reserved for the British Dairy Farmers' Association's Gold Medal for best young pigeon bred in 1923. The Blacks have much improved in the last few years.

Carriers numbered 62 in 7 classes, as against 87 in the same number of classes of the last Show, a big drop of 25. The quality was not so good as seen in previous years, with the exception of a few good ones in the Young Classes. The Any Other Colour classes are still very poor in number and quality, and we particularly noticed again this year many of the winning birds with broad skulls and short faces, which is much to be regretted, and we trust that Judges will not lose sight of the fact that the narrow skulled and long-faced must not be lost in the Carriers. The Challenge Cup for best old bird was awarded to Mr. J. Earnshaw's Black Cock, Class 34, Pen 409, which also secured the Association's Bronze Medal for best Carrier, and Mr. A. Taylor was awarded the Challenge Cup for the best young bird with Pen 455, Class 39.

Barbs numbered 23, in two classes this year, as against 10 in one last, an increase in number and the quality was good, especially in the young class, where some very good birds were penned. The Judge, Mr. W. E. Horsfall, was unable to carry out his duties in the Barb classes, as well as the Carrier section, owing to the illness of his father at the time, and Mr. A. Leith took his place in both varieties.

Dragoons, as usual, turned up in force and were the largest section in the Show, with 442 entries in 30 classes, as against 385 in 28 classes last year, an increase of 57. There was an excellent entry and the quality was well up to the average, scarcely any indifferent birds being shown. The Cotton Cup for Cocks went to Pen 785, Class 64, Messrs. Paterson Bros.' young Grizzle Cock, a very charming pigeon, and the Cotton Cup for Hens to Pen 843, Class 67, Mrs. T. J. Ambrose's young Silver Hen, a beautifully coloured pigeon, and much admired

by all. There were not many of an extraordinary merit apart from several young Chequers shown by Dr. Chadburn, who put down several very wonderful pigeons, and in faultless condition. It is interesting to note that one of the Cotton Cups went to a Grizzle this year, after the remark I made about them last year as to the great improvement that was to be seen in the Grizzles at that Show.

Messrs. Paterson Bros.' young Grizzle also won the Association's Silver Medal for the best young Dragoon in the Show.

The Hewitt Challenge Cup for best White was awarded to Mr. C. Ives's Pen 931, Class 72, also winning the Association's Bronze Medal with a very promising young bird put down in faultless condition and winning well.

The Challenge Cup for best Yellow or Red went to Class 46, Pen 532, Mr. G. Wilkinson's Cock.

The Association's Silver Medal for the best Cock bred in 1923 went to Class 64, Pen 785, Messrs. Paterson Bros.' grand young Grizzle Cock.

The Association's Silver Medal for the best Hen bred in 1923 was awarded to Class 67, Pen 843, Mrs. T. J. Ambrose's charming young Silver Hen.

Short Faced Tumblers.—This section showed a slight increase on last year's entry, but much below the 1921 entry. There were 67 entries in 7 classes, as against 64 entries in the same number of classes at last year's show. There was a decided improvement in the quality and some very good specimens of this charming old variety were on view. It is to be hoped that with the addition of several new members to the Club a bigger entry may be seen next year.

The Association's Silver Medal for the best young bird bred in 1923 was awarded to Major Godfrey Heseltine's Class 77, Pen 970, a wonderful headed little pigeon.

Long Faced Tumblers.—In this section there was an increase on last year's entry of 36, with additional two classes, which were made up as follows :—Sels had 246 entries in 16 classes and the any other variety Long Faced Tumbler had 137 entries in 13 classes, or a total of 383 entries in 29 classes, as against 347 in 27 classes in 1922. The Self Classes were again a strong feature at the Dairy Show with a good average of nearly 16 per class, which speaks well for the Tumbler fanciers. The quality throughout showed that progress was being maintained, and the big coarse bird is going out. Blacks, as usual, were very strong in numbers, and some excellent birds were penned, but they were not so forward in condition as the Reds and Yellows. The greatest improvement was most marked in the Reds, and several very typical Yellows were penned, but still two or three types are to be seen in this colour. Whites are gaining in popularity and the classes will be better supported in future we hope; and we also hope to see an improvement in the eye and beak setting, where there is still much room for improvement. The Barred and Chequers are advancing rapidly, and separating the classes seems to have done

the colours some good to encourage breeders; on the whole the Selfs made a good show and the Association's Silver Medal for the best Long Faced Tumbler bred in 1923 was awarded to Pen 1111, Class 85, Mrs. A. E. McDougall.

In the other section of Long Faced Tumblers other than Selfs, in which there were 137 entries in 13 classes, the quality of the exhibits was quite up to the standard; the outstanding specimens were the adult Black Bald Cocks and 1923 young Hens shown by Mr. A. C. Tattersall. The entry in the Clean Legged Beard classes was very poor, as I understand the Beard Fanciers have had a bad season again. The Blacks are far in advance of the other colours, which may be the reason for the poor entry in any other colours. On the whole the Tumblers altogether made a nice show.

English Owls.—The entry this year was considerably better than last, there being 100 entries in 7 classes, as compared with only 65 entries in the same number of classes in 1922, an increase of 35. The entry was only just moderate for such a breed, the quality of the exhibits being all that could be desired and some of the best birds of this variety in the country being on view, and the type is being well maintained.

The Bronze Medal of the Association for the best young Owl went to Class 113, Pen 1423, Mr. A. A. Gatty's beautiful young Blue Cock.

Foreign Owls again show a very unsatisfactory result, and it is a question if the extensive classification given at this Show should not be considerably reduced in future. Fifteen classes were put on and no less than 6 had to be cancelled, leaving 8 classes with only 47 entries in them, as against 95 in 14 classes last year; not much encouragement for the Association to put on Foreign Owl Classes in the future, when the Society has to refuse other Clubs that support the Show so much better. What few birds were penned were quite up to the average and some beautiful specimens of this charming little bird were exhibited, and the Association's Silver Medal was awarded to Mr. W. Watmough's young Black Cock, Pen 1457, Class 117.

Turbits had 74 entries in 8 classes, as against 71 in 8 classes last year. There is still much to be desired in the number of entries in this section and also of improvement in the birds, which are far from the type of birds shown a few years ago. Mr. Stirling Hunt won the Association's Bronze Medal for the best young Turbit with Pen 1563, Class 137.

Archangels, with their 4 classes, numbered 47 entries this year, the same as the 1922 Show. On the whole the birds looked well this year, with the exception of the young Hens, which were marvellously bad. The adult Cocks were a very good lot, showing glorious lustre and in fair condition, and a hard lot to place. The adult Hens were also a good lot; the young birds were somewhat out of condition, but several showed considerable promise of turning out very fine birds. It was much to be regretted that our old friend and well-

known Archangel Judge, Mr. F. T. Wiltshire, was unable to act as the Official Judge of this section, which he has done so ably for many years now ; but a very able and charming substitute was to be found in Miss T. Wiltshire, who took her father's place, and set about the no-easy task of placing the cards in a most thorough and fancier-like way, much to the satisfaction of all concerned. I believe this is the first time the Pigeon Section has been honoured by a lady actually judging a section, though some years ago Miss Machin, whose father is a well-known Judge and friend of many fanciers, was down to take the Oriental Frills, but was unable to do so on account of illness at the last moment. We hope to see other lady Judges following Miss Wiltshire in the future.

Modenas again made a very fine show and a wonderful collection of birds was penned, there being 354 exhibits in 34 classes, a drop of 33 exhibits and 4 classes as compared with last year's entries. The *Gazzi* numbered 222 in 18 classes and the *Schietti* and *Magnani* numbered 132 in 16 classes.

The *Gazzi* Classes were judged by Mr. F. H. Cobb, who found them a very good and strong lot, there being several outstanding birds ; amongst them were several of exceptional merit, notably Mr. W. S. Brocklehurst's young Blue Cock, Mr. A. C. Tattersall's old Black Cock, and Mr. F. W. Holmes's old Blue Hen. Although the *Modena* pigeon has been much improved as regards type, size, and head properties in the last few years, there is still much improvement to be made in many of the exhibits shown at the Dairy Show with regard to heads and type, as many of the exhibits were of the old type—snipy, weedy, and narrow bodied birds so objectionable—and several of the birds appeared to be rather too long and fine in neck, another fault contrary to the true type of a *Modena*.

The Blue Classes were good quality and very strong, being by far the biggest classes in the *Modena* Section, and it was the winning young Blue Cock, Class 144, Pen 1644, the property of Mr. W. S. Brocklehurst, that carried off the Association's Gold Medal for best young Pigeon in Show, bred in 1923, as well as the Association's Silver Medal for best *Gazzi Modena*.

The Black Classes did not fill quite so well as last year, but the quality was as good, and many good birds had to stand cardless.

The Bronze Classes came up well and many typical birds were to be seen in these classes, but the greatest improvement was to be seen in the Reds, where much headway has been made in getting this coloured *Modena* of proper *Modena* type. It is a great pity more fanciers have not taken this colour up and helped in its improvement. The *Schietti* Classes came up well with 132 entries in 16 classes ; the Blue Barred birds still hold the lead in this section, with the Red Laced birds, which have much improved in head and neck properties, running them close, and Argents still want a lot of improving. It is here that so many of the snipy and weedy birds are to be seen, and breeding for colour has been much neglected in the past, but we hope

that as one or two fanciers have set themselves the task of improving this colour, we shall see a great improvement before long. The Magnanis do not seem to make much headway in this country, and the entry is always very poor. Taking the Modena Section on the whole, the type has been much improved throughout, though one or two fanciers seem to think that some of the birds shown now are a bit on the big side. No Modena fancier wants a big bird, but a good big one is preferable to the snipy, weedy birds shown a few years ago by some fanciers.

The winners of the Modena Challenge Cups and Association's Silver Medals were as follows :—

Cup, Best Old Gazzi Cock, Pen 1711, Class 148, Mr. C. A. Tattersall's Old Black Cock.

Cup, Best Old Gazzi Hen, Pen 1632, Class 143, Mr. W. F. Holmes's Old Blue Hen.

Cup, Best Young Gazzi Cock, Pen 1644, Class 144, Mr. W. S. Brocklehurst's Young Blue Cock, also Silver Medal and Gold Medal.

Cup, Best Young Gazzi Hen, Pen 1671, Class 145, Mr. A. C. Tattersall's Young Blue Hen.

Cup, Best Old Schietti Cock, Pen 1876, Class 164, Mr. A. C. Tattersall's Red Laced Cock.

Cup, Best Old Schietti Hen, Pen 1887, Class 165, Mr. A. C. Tattersall's Red Laced Hen.

Cup, Best Young Schietti Cock, Pen 1859, Class 162, Dr. W. H. Tattersall's Barred Cock.

Cup, Best Young Schietti Hen, Pen 1867, Class 163, Dr. W. H. Tattersall's Barred Hen, also Silver Medal.

The Association's Silver Medal for best Gazzi bred in 1923, to Pen 1644, Class 144, Mr. W. S. Brocklehurst's young Blue Cock, the same pen winning the Association's Gold Medal for Best Young Pigeon in Show.

The Association's Silver Medal for the best Young Schietti went to Dr. W. H. Tattersall's Barred Hen, Class 163, Pen 1867.

Jacobins were a few entries down on last year's entries, there being 52 in 6 classes as against 60 in the same number of classes in 1922; the poor entry is to be accounted for by the fact that the Dairy Show is much too early for this breed, not having got over the breeding season, but the quality was good, and what birds were shown were in good condition for the time of the year. Owing to Mr. W. E. Horsfall being unable to fulfil his engagement owing to the illness of his father, Mr. A. Birch took his place and made a very good substitute. The Association's Bronze Medal was awarded to Pen 2012, Class 181, Mr. Harry Coalston's young Cock.

Nuns had 58 entries in 5 classes, as compared with 67 entries in 4 classes the previous year, a slight fall off in number, but the quality throughout was excellent and showed in better condition than in former years, and several very good type birds were to be seen in the

Any Other Colour classes, close up to the Blacks. The birds are shown in a more natural state than we have seen for several years past, we are pleased to say.

Oriental Frills numbered 137 entries in 14 classes, a decrease of 5 on last year's entry in the same number of classes. The general quality was better than last year and some very beautifully marked pigeons were to be seen in this section, the lacing on some of the exhibits being the envy of the breeders of the Schietti Modena fanciers.

The Oriental Frill Club's Cup went to Mr. G. E. Hope's Blondinette Cock, Pen 2141, Class 193, which was also reserve for the Jones' Memorial Trophy.

The Association's Silver Medal for best Young Birds went to Mr. G. E. Hope's entry in Class 194, Pen 2143.

Maggies.—This section was a great drop on last year's entry, there being only 49 entries in 6 classes, one being cancelled, as against 110 entries in 11 classes in 1922. The quality of the Black Cocks was very good, but the Hens of this colour were poor. The Reds showed marked improvement in general type and quality, but the question of colour calls for breeders' attention. The Yellows were very good, some charming birds being on view. A Silver, of very good quality, was in the Any Other Colour class, followed by two superior Duns. Though the entry was very poor, the general quality was very good, and the Association's Bronze Medal for best young bird went to Class 204, Pen 2242, Mr. Thomas Millar's fine young Yellow Cock.

Marthams had 8 entries in one class—still a great variety of type and quality to be seen in this variety.

Antwerps had an entry of 68 in 6 classes, a little better than last year, being 6 more in the same number of classes. Quality not quite up to the usual and many birds were in very poor condition, owing to the late and bad breeding season experienced by Antwerp fanciers this year. The young Cock classes were quite good and contained many birds of merit that did not get into the prize list. The young Hens were a good lot, and showed an improvement in type, substance, and quality, and if anything they were in the best condition of any. Not so many of the gravy-eyed, long-feathered, heavy, cumbersome, and lazy kind, seen so often years ago.

Show Homers numbered 149 entries in 12 classes, as compared with 170 in the same number of classes in 1922. The young birds in this section showed great improvement over previous years in regards to quality, more especially the wattle, being smoother in texture, and the winning Young Black Chequer Hen was a model in regard to type, but somewhat out of condition; the winning Young Black Chequer Cocks were too long in feather, a fault prevalent with a good many of the birds shown this year.

The Adult Classes came up well, but were poor in condition on account of the late moulting season. The cocks were only a fair lot of exhibits, whereas the hen classes provided a lot of birds of excellent type and quality, and many birds of exceptional merit.

The Esquilant Challenge Trophy winner was found in the Young Hen Class, Mr. John Douglas's Blue Chequer, Class 211, Pen 2425, the same bird taking the Association's Silver Medal for best Young Bird.

The United Show Homer Club's Challenge Cup for best Show Homer any age went to Mr. G. E. Hartley, Pen 2370, Class 217, a Chequered Hen of true Show Homer type, and quality so seldom seen.

Racing Classes brought together 304 in 6 classes, which is an increase of 89 entries on last year in the same number of classes, making the average per class of just over 50. The birds have much improved in the true Racing Pigeon type and the general run of the birds was well up to pre-war standard, and the winners in all the classes were an exceptionally fine lot. The Victory Challenge Cup, and Cup for best old bird and the Association's Silver Medal, were awarded to Capt. W. J. Sparke's Pen 2498, Class 226, an exceptionally well-built and well-feathered bird, with a good eye and determined skull, and by far the best Cock on view.

The Cup for the best young bird fell to Messrs. Wilson and Southam's very charming young Hen, Pen 2693, Class 229, which was also Reserve for the Fulton Trophy, and shown in faultless condition and one the owners should be proud to possess.

Exhibition Flying Homers.—The eight classes this year brought 97 entries, as compared with 78 in 1922—a bit of an improvement. Again the quality was only moderate, with the exception of one or two of the winners. The Association's Silver Medal was awarded to Miss Matthews and Lewis' exhibit in Class 235, Pen 2844, a very nice young Blue Chequer Hen.

Ptarmigan.—This breed was down 13 entries on last year's total, there being only 21 entries in the 2 classes this year. These classes are improving in quality if not in quantity, and the curl in feather of those shown is improving on shoulder and wings a good deal, and it is to be hoped that we shall soon see them more evenly curled all over in the near future.

Lavender Ice.—This one class had only 10 entries as compared with 16 last year; this very pretty pigeon does not seem to make the headway it should with fanciers; the feather and colour of the birds shown have much improved and the clearness of bars is better.

Runts.—Produced 12 entries in the one class, 5 down on last year's, but the size and quality was better this year than has been the case for some years past. The winners were of nice colour and feather, quality good, and the condition of all much better.

Mondains.—These two classes produced 16 entries this year, as against 20 entries in two classes last, which was the first time the table variety had been added to our schedule. We had hoped to have seen a bigger entry this Show and not less. They were a good table lot, very fine in size, with deep long breasts, carrying plenty of flesh and all in good condition. There still seems to be a great variation of type.

Swifts.—This class was also put in the schedule last year for the

first time, when the one class had 11 entries; this year only 8 entries turned up, also a drop; as in the Mondains we had hoped for better support. This class was quite a notable feature amongst the pigeon classes, and some very typical specimens were on view.

Any Other Variety Classes only numbered 13 entries in the two classes, as compared with 18 entries in one class in 1922. The Committee seem to have been ill-advised in dividing the sexes in this section, and the majority of the entries were Scandaroons, of which some very fine specimens were exhibited.

Selling Classes.—These 8 classes brought together 138 entries, 4 more than in 1922, being well supported with good and useful specimens. Many changed hands, which no doubt will prove useful as stock birds, at reasonable prices.

In conclusion, I can only repeat again that the great success of the Pigeon Section of the British Dairy Farmers' Association's Show is due, under the admirable leadership of our Chairman, Mr. S. Palgrave Page, to the very able help of my Assistant Steward, Mr. H. J. Heppel, and of my other Stewards who assisted me to carry through another successful Show at the Agricultural Hall, London, to the entire satisfaction of all who exhibited in 1923—though one had greatly to regret the loss of one bird, a Foreign Owl, of Mr. W. Watmough's, which was stolen from the Pen on the Wednesday evening and of which we have been unable up to the present to find any trace.

My best thanks are due to all those fanciers who acted voluntarily as my Stewards and Assistant Stewards for the splendid way they worked to get the birds all penned and packed at the close of the Show in good time, and for the careful way the handling was carried out, which all goes to carry through the Pigeon Section successfully; also my thanks are due to our Secretary and Assistant Secretary and his staff, for their assistance and kindly consideration at all times.

AWARD OF PRIZES, DAIRY SHOW, 1923

DAIRY COWS AND HEIFERS IN MILK.

THE "BLEDISLOE" CHALLENGE TROPHY (offered by LORD BLEDISLOE, K.B.E.), awarded to the Ayrshire Cattle Herd Book Society for the Best Exhibit of good all-round Dairy Cows. The Cows competing for the Trophy were the first six in the Breed Milking Trials, and were considered by the Inspection Judge to be typical specimens of the Breed.

THE "THORNTON" CHALLENGE CUP (offered by Messrs. JOHN THORNTON & CO.), for the Best Group of three Pedigree Shorthorn Cows and/or Heifers upon Inspection only, awarded to Denis Aldridge, for "Merry Maid 5th," "Watercrook Hylda 2nd," and "Barrington Victoress."

THE "THORNTON" CHALLENGE CUP (offered by Messrs. JOHN THORNTON & CO.), for the Best Group of three Pedigree British Friesian Cows and/or Heifers upon Inspection only, awarded to G. Holt-Thomas, for "Cymric St. Malo," "Kingswood Ceres Myrtle" and "Northdean Ceres Myrtle 2nd."

SPECIAL PRIZE of £10 (offered by Mr. ROBERT L. MOND, J.P.), and SECOND PRIZE of £5 (offered by the COUNTESS DE LA WARR), for Two Animals, the Progeny of any particular Bull, awarded respectively to Major C. R. Dudgeon, for "Cargen Holm Proud Lady 8th" and "Cargen Holm Maud 16th" (Ayrshires), and John Evens & Son, for "Burton Ruby 23rd" and "Burton Amy 7th" (Lincolnshire Red Shorthorns).

Class 1.—DAIRY SHORTHORN COW.—Entered in or eligible for Coates's Herd Book, or its pedigree sent for such entry previous to the Show, born on or previous to 1st August, 1918.—*First Inspection Prize* (£10), and *Special Inspection Prize* (£5), to D. Aldridge, for "Merry Maid 5th." *Second Inspection Prize* (£5) to F. T. Fisher, for "Watercrook Princess 2nd." *Third Inspection Prize* (£3) to G. Twentymen, for "Rosette Prim 3rd." *First Milking Trial Prize* (£12), the "Barham" Challenge Cup, the "Desborough" Cup and B.D.F.A. Gold Medal to Major S. P. Yates, for "Clara's Beauty." *Second Milking Trial Prize* (£6) to Major S. P. Yates, for "Foggathorpe Primrose." *Third Milking Trial Prize* (£3 10s.) and the "Shirley" Challenge Cup to Major S. P. Yates, for "Bright Darling."

Class 2.—DAIRY SHORTHORN COW.—Entered in or eligible for Coates's Herd Book, or its pedigree sent for such entry previous to the Show, born after 1st August, 1918, and previous to 1st August, 1920.—*First Inspection Prize* (£5), *First Milking Trial Prize* (£6) and the Shorthorn Society's Prize (£10) to L. Highnett, for "Longhills Melody." *Second Inspection Prize* (£3) to D. Aldridge, for "Watercrook Hylda 2nd." *Third Inspection Prize* (£2) to D. Aldridge for "Barrington Victoress." *Second Milking Trial Prize* (£3 10s.) to T. L. Martin, for "Highworth Felicity 3rd." *Third Milking Trial Prize* (£2 10s.), to R. Tustian, for "Primula 173rd."

Class 3.—DAIRY SHORTHORN HEIFER.—Entered in or eligible for Coates's Herd Book, born on or after 1st August, 1920. *First Inspection Prize* (£5), *First Milking Trial Prize* (£6), and the Shorthorn Society's Prize (£5) to J. G. Peel, for "Longhills Dewberry 2nd." *Second Inspection Prize* (£3) to Capt. A. S. Wills, for "Thornby Dairymaid." *Third Inspection Prize* (£2), *Second Milking Trial Prize* (£3 10s.), and the Shorthorn Society's Prize (£5) to T. L. Martin, for "Thrup Dairymaid." *Third Milking Trial Prize* (£2 10s.) to J. Clarke, for "Cherry 37th."

- Class 4.—DAIRY SHORTHORN COW.—Not eligible for Classes 1 or 2.—*First Inspection Prize* (£10) and the Dairy Shorthorn Association's Prize (£10) to J. L. Shirley, for "Charming Lass." *Second Inspection Prize* (£5) to W. H. Phipps, for "Daisy." *Third Inspection Prize* (£3) and *Third Milking Trial Prize* (£3 10s.) to J. R. Goodman, for "Pretty Maid." *First Milking Trial Prize* (£12) and *Special Inspection Prize* (£5) to A. B. Croxon, for "Spot." *Second Milking Trial Prize* (£6) to J. R. Goodman, for "Marion."
- Class 5.—DAIRY SHORTHORN HEIFER.—Not eligible for Class 3, born on or after 1st August, 1920. *First Inspection Prize* (£5) and *First Milking Trial Prize* (£6) to N. Hardman, for "Sally." *Second Inspection Prize* (£3) to A. Stapleton & Sons, Ltd., for "Brooklands Buttercup 2nd." *Third Inspection Prize* (£2) to the Kingsclere Farms, for "Cress 2nd." *Second Milking Trial Prize* (£3 10s.) to A. Cheney, for "Burbage Cherry 5th." *Third Milking Trial Prize* (£2 10s.) to A. Stapleton & Sons, Ltd., for "Lady of Enfield."
- Class 6.—LINCOLNSHIRE RED SHORTHORN COW.—Entered in or eligible for the Herd Book of the Lincolnshire Red Shorthorn Association.—*First Inspection Prize* (£10) and *Special Inspection Prize* (£5) to John Evens & Son, for "Burton Ruby 23rd." *Second Inspection Prize* (£5) to B. G. Bowser, for "Scothern Actress 2nd." *Third Inspection Prize* (£3) to J. O. Burchnall, for "Flamville Dairymaid 143rd." *First Milking Trial Prize* (£12) to John Evens & Son, for "Burton Amy 7th." *Second Milking Trial Prize* (£6) to John Evens & Son, for "Burton Ruby Spot 15th." *Third Milking Trial Prize* (£3 10s.) to S. Blundell, for "Bendish Hope 3rd."
- Class 7.—LINCOLNSHIRE RED SHORTHORN HEIFER.—Entered in or eligible for the Herd Book of the Lincolnshire Red Shorthorn Association, born on or after 1st August, 1920.—*First Inspection Prize* (£5) to S. Reading, for "Langford Queen 12th." *Second Inspection Prize* (£3) to S. Reading, for "Langford Froud 6th." *Third Inspection Prize* (£2) to John Evens & Son, for "Burton Showy 7th." *First Milking Trial Prize* (£8 10s.) to J. O. Burchnall, for "Flamville Dairymaid 172nd." *Second Milking Trial Prize* (£5) to A. Barber, for "Retford Russett 2nd." *Third Milking Trial Prize* (£2 10s.) to John Evens & Son, for "Burton Cherry 5th."
- Class 8.—BRITISH FRIESIAN COW.—Entered in or eligible for the Herd Book, born on or previous to 1st August, 1918.—*First Inspection Prize* (£10), to Lord Rayleigh, for "Terling Warner 3rd." *Second Inspection Prize* (£5) and *Special Inspection Prize* (£5) to A. H. Gnest for "Chaddesley Gaby." *Third Inspection Prize* (£3) to Lord Rayleigh, for "Terling Torch 13th." *First Milking Trial Prize* (£12) to G. Holt-Thomas, for "Kingswood Myrtle Leaf." *Second Milking Trial Prize* (£6) to G. Holt-Thomas, for "Blackmore Ena 2nd."
- Class 9.—BRITISH FRIESIAN COW.—Entered in or eligible for the Herd Book, born after 1st August, 1918, and previous to 1st August, 1920.—*First Inspection Prize* (£5) to F. W. Gilbert, for "Petygards Countess." *Second Inspection Prize* (£3) to Lt.-Col. J. F. N. Baxendale, for "Froxfield Cowslip." *Third Inspection Prize* (£2) to F. & T. Neame, for "Macknade Endaw." *First Milking Trial Prize* (£6) to W. Twentyman, for "Winchester Mollie." *Second Milking Trial Prize* (£3 10s.) to Seton de Winton, for "Franks Bullseye." *Third Milking Trial Prize* (£2 10s.) to G. Holt-Thomas, for "Kingswood Ceres Myrtle."
- Class 10.—BRITISH FRIESIAN HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First Inspection Prize* (£5) to G. Holt-Thomas for "Northdean Ceres Myrtle 2nd." *Second Inspection Prize* (£3) and *First Milking Trial Prize* (£6) to The Hache Herd, for "Hache Akkar Virtue."
- Class 11.—BRITISH FRIESIAN COW.—Registered for entry in the Supplementary Register of Foundation Cows.—Cancelled.

- Class 12.—SOUTH DEVON COW.—Entered in or eligible for the Herd Book.—*First Inspection Prize* (£7), *First Milking Trial Prize* (£8 10s.), the South Devon Herd Book Society's Prize (£5) and *Special Inspection Prize* (£5) to W. Hunt, for "Netton Lily." *Second Inspection Prize* (£4) and *Second Milking Trial Prize* (£5) to G. Banbury, for "Milkaway." *Third Inspection Prize* (£2) to W. Hunt, for "Pinkie."
- Class 13.—DEVON COW.—Entered in or eligible for the Herd Book, or entered in the Supplemental Register of such Herd Book.—*First Inspection Prize* (£7), *Second Milking Trial Prize* (£5), *Special Inspection Prize* (£5) and the "Busk" Challenge Cup to N. D. Lupton, for "Wynford Molly." *Second Inspection Prize* (£4) and *Third Milking Trial Prize* (£2 10s.) to W. D. Chick, for "Lovely 4th." *Third Inspection Prize* (£2) and *First Milking Trial Prize* (£8 10s.) to N. D. Lupton, for "Compton Handsome."
- Class 14.—RED POLL COW.—Entered in or eligible for the Herd Book, born on or previous to 1st August, 1918.—*First Inspection Prize* (£7), *Second Milking Trial Prize* (£5), *Red Poll Cattle Society's Prize* (£5) and *Special Inspection Prize* (£5) to S. Scrimgeour, for "Sotterley Winsome." *Second Inspection Prize* (£4) to J. B. Dimmock, for "Shotford Star Duchess 121st." *Third Inspection Prize* (£2) to C. F. Newton & Son, for "Meadow Mollie." *First Milking Trial Prize* (£8 10s.) and the National Milk Challenge Cup to J. B. Dimmock, for "Gressenhall Wild Girl." *Third Milking Trial Prize* (£2 10s.) to Sir Albert Bowen, Bart., for "Gressenhall Margate."
- Class 15.—RED POLL COW.—Entered in or eligible for the Herd Book, born after 1st August, 1918, and previous to 1st August, 1920.—*First Inspection Prize* (£7) to W. G. Munnings, for "Mendham Dowager." *Second Inspection Prize* (£4) to Major J. A. Morrison, D.S.O., for "Basildon Fairy." *Third Inspection Prize* (£2) and *Second Milking Trial Prize* (£5) to C. F. Newton & Sons, for "Soham Rubicon." *First Milking Trial Prize* (£8 10s.) to Capt. A. Richardson, for "Seven Springs Lupine." *Third Milking Trial Prize* (£2 10s.) to Felix W. Leach, for "Meddler Starlight."
- Class 16.—RED POLL HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First Inspection Prize* (£5), *Third Milking Trial Prize* (£2 10s.) and *Red Poll Cattle Society's Prize* (£5) to Major J. A. Morrison, D.S.O., for "Dallinghoo Russett Robbery 4th." *Second Inspection Prize* (£3) to Mrs. R. M. Foot, for "White Hill Flight." *Third Inspection Prize* (£2) and *Second Milking Trial Prize* (£3 10s.) to the Earl of Lonsdale for "Lowther Almond." *First Milking Trial Prize* (£6) to Capt. A. Richardson for "Seven Springs Berry."
- Class 17.—BLUE ALBION COW.—Entered in or eligible for the Herd Book.—*First Inspection Prize* (£10) to R. Long, for "Sweepstone Clipper." *Second Inspection Prize* (£5) to R. Long, for "Stondon Snowflake."
- Class 18.—WELSH BLACK COW.—Entered in or eligible for the Herd Book.—No entry.
- Class 19.—AYRSHIRE COW.—*First Inspection Prize* (£7), *First Milking Trial Prize* (£8 10s.), *Special Inspection Prize* (£5), the "Rowallan" Champion Cup and the "Spencer" Challenge Cup to A. & A. Kirkpatrick, for "Barr Amelia." *Second Inspection Prize* (£4) and *Second Milking Trial Prize* (£5) to A. Y. Allan, for "Aitkenbar Kate 3rd." *Third Inspection Prize* (£2) to A. & A. Kirkpatrick, for "Barr Flirt." *Third Milking Trial Prize* (£2 10s.) to Thomas Barr, for "Southside Rosie 2nd."
- Class 20.—AYRSHIRE HEIFER.—Registered or eligible for registration with a number in the Herd Book, or in the Appendices, born on or after 1st August, 1920.—*First Inspection Prize* (£5) and *First Milking Trial Prize* (£6) to A. Y. Allan, for "Aitkenbar Winnie." *Second Inspection Prize* (£3) and *Second Milking Trial Prize* (£3 10s.) to Major C. R. Dudgeon, for "Cargen Holm Maud 16th." *Third Inspection Prize* (£2) to James Seton, for "Shew-alton Mains Gay Lass 6th." *Third Milking Trial Prize* (£2 10s.) to Major C. R. Dudgeon, for "Cargen Holm Proud Lady 8th."

- Class 21.—**GUERNSEY COW.**—Entered in or eligible for the Herd Book, born on or previous to 1st August, 1918.—*First* Inspection Prize (£7) and *Special* Inspection Prize (£5) to A. Chester Beatty, for "Lizette of St. Catherine." *Second* Inspection Prize (£4) to A. Chester Beatty, for "Rowanberry of Goodnestone." *Third* Inspection Prize (£2) to A. Chester Beatty, for "Masher Girl of the Marais." *First* Milking Trial Prize (£8 10s.) to Sir James Remnant, Bart., M.P., for "Princess of Caillioterie."
- Class 22.—**GUERNSEY COW.**—Entered in or eligible for the Herd Book, born after 1st August, 1918, and previous to 1st August, 1920.—*First* Inspection Prize (£5) and *Second* Milking Trial Prize (£3 10s.) to Sir E. A. Hambro, K.C.V.O., for "Florrie 2nd of the Brecque." *Second* Inspection Prize (£3) to Sir E. A. Hambro, K.C.V.O., for "Donita of Les Grantes." *Third* Inspection Prize (£2), *First* Milking Trial Prize (£6) and the "Stagenhoe" Challenge Cup to Lady Sophie Scott, for "Dene Sundial." *Third* Milking Trial Prize (£2 10s.) to A. Chester Beatty, for "Addington Begum 4th."
- Class 23.—**GUERNSEY HEIFER.**—Entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First* Inspection Prize (£5) and *First* Milking Trial Prize (£6) to Sir William Cain, Bart., J.P., for "Emblem's Enchantress." *Second* Inspection Prize (£3) to A. Chester Beatty, for "Sylph's Fairy."
- Class 24.—**JERSEY COW.**—Entered in or eligible for the Herd Book.—*First* Inspection Prize (£7), *Second* Milking Trial Prize (£5) to R. W. Carson, for "Diana's Rose." *Second* Inspection Prize (£4), *Special* Inspection Prize (£5), and the "Blythwood" Bowl to R. Bruce Ward, for "Evergreen." *Third* Inspection Prize (£2) to Col. L. Gisborne, C.M.G., for "Duchess of Aldan." *First* Milking Trial Prize (£8 10s.) to Grosvenor Berry, for "Negundo." *Third* Milking Trial Prize (£2 10s.) to Col. L. Gisborne, C.M.G., for "Thyme."
- Class 25.—**JERSEY HEIFER.**—Bred in Great Britain or Ireland, entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First* Inspection Prize (£5) to R. W. Carson, for "Crystal Origas Chablis." *Second* Inspection Prize (£3) to Col. L. Gisborne, C.M.G., for "Lingen Lass." *Third* Inspection Prize (£2) to R. Bruce Ward, for "Mirthful." *First* Milking Trial Prize (£6) to Grosvenor Berry, for "Golden Raspberry." *Second* Milking Trial Prize (£3 10s.) to R. Bruce Ward, for "Golden Madeira." *Third* Milking Trial Prize (£2 10s.) to the Earl of Strafford, for "Letitia."
- Class 26.—**JERSEY HEIFER.**—Bred in the Channel Islands, entered in or eligible for the Jersey or English Jersey Herd Book, born on or after 1st August, 1920.—*First* Inspection Prize (£5) and *First* Milking Trial Prize (£6) to Mrs. Hayes Sadler, for "Zaffarine." *Second* Inspection Prize (£3), and *Second* Milking Trial Prize (£3 10s.) to J. H. N. Roberts, for "Le Grande Rue Mistress 2nd." *Third* Inspection Prize (£2) to R. Bruce Ward, for "Moana's Opal." *Third* Milking Trial Prize (£2 10s.) to O. F. Mosley, for "Magazine."
- Class 27.—**KERRY COW.**—Entered in or eligible for the Herd Book.—*First* Inspection Prize (£5), *First* Milking Trial Prize (£6) and the English Kerry and Dexter Society's Challenge Cup to Capt. N. Zambra and C. Williamson-Milne, for "Flora of Carton." *Second* Inspection Prize (£3) to Miss P. de B. F. Bowen-Colthurst, for "Castletown Maid 3rd." *Third* Inspection Prize (£2) and Milking Trial Prize (2nd and 3rd divided) (£3) to Lt.-Col. W. G. Morden, J.P., for "Cowslip of Carton." Milking Trial Prize (2nd and 3rd divided) (£3) to The Theosophical Educational Trust (Great Britain and Ireland) Co., Ltd., for "Buckhurst Elfin."
- Class 28.—**KERRY HEIFER.**—Entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First* Inspection Prize (£4) to Capt. N. Zambra and C. Williamson-Milne, for "Castletown Darkie." *Second* Inspection Prize (£3) to The Theosophical Educational Trust (Great Britain and Ireland) Co., Ltd., for "Starlight of Warren." *Third* Inspection Prize (£2) and *First* Milking Trial Prize (£5) to The Theosophical Educational Trust (Great Britain and Ireland) Co., Ltd., for "Emerald of Warren."

Class 29.—DEXTER COW.—Entered in or eligible for the Herd Book.—*First Inspection Prize* (£5), *First Milking Trial Prize* (£6) and the "Nutt" Challenge Cup to Alfred C. King, for "La Mancha Madeline." *Second Inspection Prize* (£3) to The Ratcliffe Herd of Pedigree Dexters for "Fillongley Farola." *Third Inspection Prize* (£2) to the Ratcliffe Herd of Pedigree Dexters for "Fillongley Favourite."

Class 30.—DEXTER HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First Inspection Prize* (£4), and *First Milking Trial Prize* (£5) to Alfred C. King, for "Braishfield Black Tulip." *Second Inspection Prize* (£3) to The Ratcliffe Herd of Pedigree Dexters, for "Fillongley Forest Footprint." *Third Inspection Prize* (£2) and *Second Milking Trial Prize* (£3 10s.) to The Ratcliffe Herd of Pedigree Dexters, for "Fillongley Forest Flower."

Class 31.—COW OF ANY BREED.—Milked three times daily and judged on Inspection in the existing Breed Classes. Not eligible to compete with animals milked twice daily for Milking Trial and Butter Test Prizes and Trophies. *First Milking Trial Prize* (£15) to Lord Rayleigh, for "Terling Warner 3rd." *Second Milking Trial Prize* (£10) to G. Holt-Thomas, for "Beccles Silver Queen." *Third Milking Trial Prize* (£5) to Lord Rayleigh, for "Terling Torch 13th."

BUTTER TESTS.

SHORTHORNS, entered in Classes 1, 2, 3, 4, 5, 6, and 7.—*First Prize* (£10 and Silver Medal) to Major S. P. Yates, for "Clara's Beauty." *Second Prize* (£5 and Bronze Medal) to A. B. Croxon, for "Spot." *Third Prize* (£3) to J. H. Robinson, for "Kirklevington 54th." *Fourth Prize* (£2) to John Evens & Son, for "Burton Ruby Spot 15th."

BRITISH FRIESIANS, entered in Classes 8, 9, 10, and 11.—*First Prize* (£10 and Silver Medal) to G. Holt-Thomas, for "Kingswood Ceres Myrtle." *Second Prize* (£5 and Bronze Medal) to G. Holt-Thomas, for "Kingswood Myrtle Leaf." *Third Prize* (£3) to G. Holt-Thomas, for "Blackmore Ena 2nd." *Fourth Prize* (£2) to W. & R. Wallace, for "Knebworth Yntes Marigold."

RED POLLS, entered in Classes 14, 15, and 16.—*First Prize* (£5 and Silver Medal) to S. Scrimgeour, for "Sotterley Winsome." *Second Prize* (£3 and Bronze Medal) to J. B. Dimmock, for "Gressenhall Wild Girl." *Third Prize* (£2) to Capt. A. Richardson, for "Seven Springs Lupine."

AYRSHIRES, entered in Classes 19 and 20.—*First Prize* (£5 and Silver Medal) to A. & A. Kirkpatrick, for "Barr Amelia." *Second Prize* (£3 and Bronze Medal) to A. & A. Kirkpatrick, for "Barr Flirt." *Third Prize* (£2) to A. Y. Allan, for "Aitkenbar Kate 3rd."

GUERNSEYS, entered in Classes 21, 22, and 23.—*First Prize* (£5 and Silver Medal) to Sir James Remnant, Bart., M.P., for "Princess of Caillotterie." *Second Prize* (£3 and Bronze Medal) to Lady Ludlow, for "Myrtle Lady 2nd of Newgrove." *Third Prize* (£2) to Lady Sophie Scott, for "Dene Sundial."

JERSEYS, entered in Classes 24, 25, and 26.—*First Prize* (£5 and E. J. C. S. Gold Medal) to Grosvenor Berry, for "Negundo." *Second Prize* (£3 and E. J. C. S. Silver Medal) to Grosvenor Berry, for "Golden Raspberry." *Third Prize* (£2 and E. J. C. S. Bronze Medal) to R. Bruce Ward, for "Evergreen."

ANY OTHER BREED, entered in Classes 12, 13, 17, 27, 28, 29, and 30. Prizes of £3 each to Walter Hunt for "Netton Lily" (South Devon); N. D. Lupton, for "Compton Handsome" (Devon); Capt. N. Zambra and C. Williamson-Milne, for "Flora of Carton (Kerry); A. C. King, for "La Mancha Madeline" (Dexter). Prizes of £2 each to N. D. Lupton, for "Wynford Molly" (Devon); Capt. N. Zambra and C. Williamson-Milne, for "Wadlands Buttermilker" (Kerry); A. C. King, for "Braishfield Black Tulip" (Dexter).

Medals offered by the English Kerry and Dexter Cattle Society awarded, as follows:—Gold to Capt. N. Zambra and C. Williamson-Milne, for "Flora of Carton." Silver to Capt. N. Zambra and C. Williamson-Milne, for "Wadlands Buttermilker." Bronze to Lt.-Col. W. G. Morden, J.P., for "Jill of Carton."

BULLS.

Class 32.—DAIRY SHORTHORN BULL.—Entered in or eligible for Coates' Herd Book, born previous to 1st August, 1921.—*First Prize* (£10) to W. C. Spencer & Son, for "Rickerseote Leader." *Second Prize* (£5) to F. S. Francis, for "Colescombe Dolphin." *Third Prize* (£3) to Lt.-Col. W. M. Pryor, D.S.O., for "Lannock Hero." *Fourth Prize* (£2) to R. N. Tory, for "Kelmescott Conjuror 3rd."

Class 33.—DAIRY SHORTHORN BULL.—Entered in or eligible for Coates's Herd Book, born on or after 1st August, 1921.—*First Prize* (£10) to Capt. Hon. E. A. Fitzroy, for "Foxhill Caryl." *Second Prize* (£5) to Capt. A. S. Wills, for "Thornby Royal Cran." *Third Prize* (£3) to Capt. P. D. A. Courtenay, for "Conjuror 2nd." *Fourth Prize* (£2) to P. C. Vestey, for "Andersen Conjuror 9th."

Class 34.—JERSEY BULL.—Entered in or eligible for the Herd Book, born on or after 1st August, 1920.—*First Prize* (£10) to R. Bruce Ward, for "Canterbury Pilgrim." *Second Prize* (£5) to Mrs. O. Ames, for "Plutarch."

Class 35.—BRITISH FREISIAN BULL.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First Prize* (£5) to F. Sykes, for "Kingswood King Ceres."

Class 36.—BULL OF ANY PURE BREED (not eligible for Classes 32, 33, 34, and 35).—Entered in or eligible for its respective Herd Book, born previous to 1st August, 1922.—Silver Medal to Sir Everard Hambro, K.C.V.O., for "Downe Warbler's Dream 4th" (Guernsey); Hurst Bros., for "White Hill Hermit" (Red Poll); N. D. Lupton, for "Chalmington Quaker" (Devon).

SHE-GOATS.

MILKING COMPETITION FOR GOATS OF ANY VARIETY.

Class 37.—She-Goat qualified as "Star or 'Q' Star Milker."—*First Prize* (£6 and Silver Medal), the "Tremedda Selene" Challenge Cup and the "Dewar" Challenge Trophy to Miss Pope, for "Problem of Bashley" (Anglo-Nubian-Swiss). *Second Prize* (£3) to Miss C. Chamberlain, for "Welfare of Westons" (British Saanen). *Third Prize* (£1 10s.) to Mrs. L. Hines, for "Grietze" (Saanen).

Class 38.—SHE-GOAT not eligible for Class 37.—*First Prize* (£6 and Silver Medal) to Mrs. M. J. Rutter, for "Raydon Meltis" (British Toggenburg). *Second Prize* (£3) to Miss M. Henderson, for "Vertue" (Toggenburg). *Third Prize* (£1 10s.) to Miss M. Henderson, for "Riding Topsy 2nd" (Anglo-Nubian Toggenburg).

INSPECTION CLASSES.

Class 39.—SHE-GOAT, TOGGENBURG, entered in the Toggenburg Section of the Herd Book, or eligible for entry therein.—*First Prize* (£2 10s.), the "Riding" Challenge Cup, the "Straker" Challenge Cup, and Breed Challenge Certificate to Miss M. Henderson, for "Riding Cherry." *Second Prize* (£1 5s.) to Miss M. Henderson, for "Vertue." *Third Prize* (15s.) to Miss M. Henderson, for "Leazes Cornel."

Class 40.—SHE-GOAT, BRITISH TOGGENBURG.—*First Prize* (£2 10s.) to Mrs. H. Potton, for "Rayleigh Primrose." *Second Prize* (£1 5s.) to Miss C. Chamberlain, for "Wistful of Westons." *Third Prize* (15s.) to Mrs. H. Potton, for "Rayleigh Harebell."

- Class 41.—SHE-GOAT, BRITISH ALPINE.—No award.
- Class 42.—SHE-GOAT, SAANEN.—Entered in or eligible for entry in the Swiss or Saanen Section of the Herd Book.—*First Prize* (£2 10s.) and Breed Challenge Certificate to Mrs. L. Hines, for "Grietze."
- Class 43.—SHE-GOAT, ANGLO-NUBIAN, being any Goat entered in the Anglo-Nubian Section of the Herd Book, or eligible for entry therein.—No award.
- Class 44.—SHE-GOAT, ANY OTHER VARIETY, not eligible for previous Classes.—*First Prize* (£2 10s.) and the British Goat Society's Challenge Cup to Miss C. Chamberlain, for "Welfare of Wistons" (British Saanen). *Second Prize* (£1 5s.), the "Baroness Burdett-Coutts" Challenge Cup, and Challenge Certificate to Miss Pope, for "Problem of Bashley" (Anglo-Nubian-Swiss). *Third Prize* (15s.) and the "Riding" Challenge Cup to Miss M. Henderson, for "Riding Topsy 2nd" (Anglo-Nubian-Toggenburg).
- Class 45.—SHE-GOAT that is recorded under a recognised Milk Recording Society.—*First Prize* (£2 10s.) to Mrs. H. Potton, for "Rayleigh Primrose" (British Toggenburg). *Second Prize* (£1 5s.) to Mrs. H. Potton, for "Empress March" (British Toggenburg). *Third Prize* (15s.) to Miss Pope, for "Problem of Bashley" (Anglo-Nubian-Swiss).
- Class 46.—GOATLINGS, TOGGENBURG AND BRITISH TOGGENBURG.—Over one year but not exceeding two years.—*First Prize* (£2 10s.) to Mrs. M. J. Rutter, for "Raydon Morella." *Second Prize* (£1 5s.) not awarded. *Third Prize* (15s.) to Mrs. F. J. Browell, for "Feltham Fuchsia."
- Class 47.—GOATLINGS, BRITISH ALPINE.—Over one year, but not exceeding two years.—*First Prize* (£2 10s.) the "Riding" Challenge Cup and Bronze Medal to Miss M. Henderson, for "Riding Thistledown." *Second Prize* (£1 5s.) to Miss Pope, for "Ping Pong of Bashley."
- Class 48.—GOATLINGS, SAANEN OR BRITISH SAANEN.—Over one year, but not exceeding two years.—No award.
- Class 49.—GOATLINGS, ANGLO-NUBIAN.—Entered in or eligible for entry in the Anglo-Nubian Section of the Herd Book.—Over one year, but not exceeding two years.—No award.
- Class 50.—GOATLINGS, ANY OTHER VARIETY.—Not eligible for previous Classes.—Over one year, but not exceeding two years.—*First Prize* (£2 10s.) to Miss M. G. Cullen, for "Keighley Eva" (Anglo-Nubian-Swiss). *Second Prize* (£1 5s.) to Miss Pope, for "Playful of Bashley" (Anglo-Nubian-Swiss). *Third Prize* (15s.) to Mrs. F. J. Browell, for "Rayleigh Dark" (Anglo-Nubian-Swiss).

CHEESE.

- Class 51.—STILTON (6 Cheeses).—*First Prize* (£7) to The Colston Bassett & District Dairy, Ltd. *Second Prize* (£4) to The United Dairies (Wholesale), Ltd. *Third Prize* (£2) to J. M. Nuttall & Co., Ltd.
- Class 52.—STILTON (36 Cheeses).—*First Prize* (£10 and Silver Medal) to The United Dairies (Wholesale), Ltd. *Second Prize* (£5) to The Colston Bassett & District Dairy, Ltd. *Third Prize* (£3) to J. M. Nuttall & Co., Ltd.
- Class 53.—CHEDDAR TRUCKLES (6 Cheeses).—*First Prize* (£5) to W. Hunter. *Second Prize* (£3) to Miss L. M. Browning. *Third Prize* (£2) to F. Portch.
- Class 54.—CHEDDAR (4 Cheeses).—*First Prize* (£7) to S. T. White. *Second Prize* (£4) to G. W. Love. *Third Prize* (£3) to R. E. Harding. *Fourth Prize* (£2) to S. D. Tucker & Sons. *Fifth Prize* (£1) to J. W. Banwell.
- Class 55.—CHEDDAR (20 Cheeses).—*First Prize* £15 and Silver Medal, the "Fullwood and Bland" Challenge Cup and the "Viking" Challenge Cup to A. Harvey Stevenson. *Second Prize* (£10) to A. Cochran. *Third Prize* (£7) to G. W. Love. *Fourth Prize* (£5) to F. Portch. *Fifth Prize* (£3) to R. E. Harding.

- Class 56.—COLONIAL CHEDDAR, Coloured or Uncoloured (4 Cheeses not less than 60 lbs. each).—*First Prize* (Gold Medal) and the "Hansen" Challenge Trophy to W. C. Taylor. *Second Prize* (Silver Medal) to The Edendale Co-operative Dairy Co., Ltd. *Third Prize* (Bronze Medal) to J. Sprott.
- Class 57.—CHESHIRE (20 Cheeses).—*First Prize* (£15) to W. H. Hobson. *Second Prize* (£10) to H. O. Williamson. *Third Prize* (£7) to P. Fearnall. *Fourth Prize* (£5) to P. Sumner. *Fifth Prize* (£3) to W. Blockley.
- Class 58.—CHESHIRE (4 Coloured Cheeses, not less than 40 lbs. each).—*First Prize* (£7) and the "Fullwood and Bland" Challenge Cup to I. E. Jones. *Second Prize* (£4) to F. Huntback. *Third Prize* (£2) to H. O. Williamson.
- Class 59.—CHESHIRE (4 Uncoloured Cheeses, not less than 40 lbs. each).—*First Prize* (£7) to J. Huntback. *Second Prize* (£4) to W. E. Moore. *Third Prize* (£2) to F. J. Millington.
- Class 60.—CHESHIRE (4 Cheeses, not less than 40 lbs. each).—Open only to those who have never won a Prize for Cheshire Cheese at any Show of the British Dairy Farmers' Association.—*First Prize* (£5) to J. Huntback. *Second Prize* (£3) to G. Madew. *Third Prize* (£2) to R. J. Lea.
- Class 61.—LEICESTER (4 Cheeses). *First Prize* (£4) to The British Dairy Institute. *Second Prize* (£3) to F. W. Tomlinson. *Third Prize* (£2) to J. Harrison.
- Class 62.—LANCASHIRE (4 Cheeses).—*First Prize* (£4) to J. Fisher. *Second Prize* (£3) to T. Sanderson. *Third Prize* (£2) to J. Shorrock.
- Class 63.—DERBY (4 Uncoloured Cheeses, not less than 25 lbs. each).—*First Prize* (£4) to The United Dairies (Wholesale), Ltd., Rochester. *Second Prize* (£3) to The United Dairies (Wholesale), Ltd., Ellastone. *Third Prize* (£2) to The East Anglian Institute of Agriculture.
- Class 64.—FACTORY.—To be manufactured at and exhibited by a recognised Cheese Factory dealing with a minimum of 500 gallons of milk daily (10 Cheeses, any Variety, not less than 28 lbs. each).—*First Prize* (£7) and the "Hansen" Challenge Trophy to The Fenwick Farmers' Co-operative Association, Ltd. *Second Prize* (£4) to H. Edwards & Son, Ltd. *Third Prize* (£2) to The Cheshire & Shropshire Milk Depots, Ltd. *Fourth Prize* (£1) to The Port William Dairy Farmers' Association, Ltd.
- Class 65.—DOUBLE GLOSTER (4 Cheeses, from 26 lbs. to 30 lbs. each, total weight not to exceed 120 lbs.).—*First Prize* (£4) to The British Dairy Institute. *Second Prize* (£3) to F. Portch. *Third Prize* (£2) to The United Dairies (Wholesale), Ltd.
- Class 66.—SINGLE GLOSTER (4 Cheeses, from 13 lbs. to 15 lbs. each, total weight not to exceed 60 lbs.).—*First Prize* (£4) to E. F. Jones. *Second Prize* (£3) to F. Portch. *Third Prize* (£2) to Mrs. J. C. Blanch.
- Class 67.—CAERPHILLY (4 Cheeses, not exceeding 8 lbs. each).—*First Prize* (£4) to Cox & Sons. *Second Prize* (£3) to Miss P. Hurman. *Third Prize* (£2) to Cheddar Valley Dairy Co., Ltd.
- Class 68.—WENSLEYDALE (6 Cheeses, Blue-moulded).—*First Prize* (£4) to A. Rowntree, Son & Wright, Aysgarth. *Second Prize* (£3) to The British Dairy Institute. *Third Prize* (£2) to A. Rowntree, Son & Wright, Coverham.
- Class 69.—SMALLHOLDER PRESSED, Quick Ripening (2 Cheeses under 8 lbs., but over 4 lbs. each).—*First Prize* (£2) to Mrs. W. Wareham. *Second Prize* (£1) to Mrs. W. J. T. Pantall. *Third Prize* (10s.) to Miss A. Potbury. *Fourth Prize* (5s.) to Cox & Sons.
- Class 70.—SMALLHOLDER PRESSED, Long Keeping (2 Cheeses, under 8 lbs., but over 4 lbs. each).—*First Prize* (£2), the "Walker" Challenge Cup and The "McWilliam" Silver Fruit Dish to E. Walters. *Second Prize* (£1) to Miss W. Fry. *Third Prize* (10s.) to Mrs. W. Wareham. *Fourth Prize* (5s.) to Mrs. E. W. Evans.

Class 71.—SMALLHOLDER PRESSED, Quick Ripening (2 Cheeses, not exceeding 4 lbs. each).—*First Prize* (£2) to Mrs. M. Gibbon. *Second Prize* (£1) to Mrs. A. Blatchford. *Third Prize* (10s.) to Mrs. C. A. Simmons. *Fourth Prize* (5s.) to Miss L. Yield.

Class 72.—SMALLHOLDER PRESSED, Long Keeping (2 Cheeses, not exceeding 4 lbs. each). *First Prize* (£2) to Miss E. M. Madge. *Second Prize* (£1) to H. C. Knapman. *Third Prize* (10s.) to Mrs. C. A. Simmons. *Fourth Prize* (5s.) to Cox & Sons.

Class 73.—SMALL CHEDDAR (2 Cheeses, made at home, from 8 lbs. to 10 lbs. each).—Open to pupils who have attended County Travelling Cheese Schools during 1922 or 1923.—*First Prize* (£3) to Miss W. Fry. *Second Prize* (£2) to H. V. Stainer. *Third Prize* (£1) to Mrs. L. Roberts. *Fourth Prize* (10s.) to Miss M. Hull.

Class 74.—SMALL CHESHIRE (2 Cheeses, made at home, from 8 lbs. to 10 lbs. each).—Open to pupils who have attended County Travelling Cheese Schools during 1922 or 1923.—*First Prize* (£3) to Miss E. Jones. *Second Prize* (£2) to Miss E. Waters.

Class 75.—INTER-COUNTY COMPETITION. FOR THE BEST COLLECTION OF SMALLHOLDER CHEESES made by the persons who have received instruction in Cheesemaking at a County Council Travelling Cheese School during 1920-1923. The Head Teacher or County Organiser in each County to make the entry, which shall consist of six individual Competitors whose names shall be stated at the time of entry. Each Competitor's Exhibit shall consist of four cheeses—manufactured in Competitors' own dairies—of not more than 8 lbs. each in weight, and the number of distinct varieties and types are taken into consideration when making Awards. The prizes to be allocated: One half to the successful Competitors and one half to the County Teacher or Teachers. A Certificate of Merit will be awarded by The British Dairy Farmers' Association to each individual competitor receiving a Prize. *First Prize* (the "Inter-County" Challenge Shield and (£10) to Montgomeryshire:—Miss M. J. Williams (Instructress).

Miss N. Bebb.

Miss L. Goliah.

Miss M. Walkin.

Miss M. L. Edwards.

Miss E. Jones.

Miss M. Wood.

Class 76.—CREAM CHEESE, made from pure Cream only. No Milk or Curd to be added (6 Cheeses).—*First Prize* (£1) to Miss J. MacGillivray. *Second Prize* (10s.) to T. R. Bolitho.

Class 77.—UNRIPENED SOFT CHEESE, other than Cream Cheese. Made direct from Milk (4 Cheeses).—*First Prize* (£1) to The East Anglian Institute of Agriculture. *Second Prize* (10s.) to C. E. Keyser.

BACON.

Class 78.—PALE DRIED (4 hamless sides of Spring or Winter Cure).—Cancelled.

Class 79.—SMOKED (4 sides, mild cured in Wiltshire style with ham attached).—*First Prize* (Silver Medal) to The Herts and Beds Bacon Factory, Ltd. *Second Prize* (Bronze Medal) to M. Venner & Sons, Ltd.

Class 80.—PALE DRIED (4 sides, mild cured in Wiltshire style, with ham attached).—*First Prize* (Silver Medal) to M. Venner & Sons, Ltd. *Second Prize* (Bronze Medal) to W. H. Smart & Co., Ltd.

Class 81.—TWO SIDES OF BACON SMOKED, TWO SIDES OF BACON PALE DRIED, TWO HAMS SMOKED AND TWO HAMS PALE DRIED (the weight of the sides not less than 56 lbs. and not more than 68 lbs. each; the hams not less than 12 lbs. and not more than 20 lbs. each).—*First Prize* (£7 7s.) to M. Venner & Sons, Ltd. *Second Prize* (£3 3s.) to M. Venner & Sons, Ltd. *Third Prize* (£2 2s.) to The Herts and Beds Bacon Factory, Ltd.

Class 82.—BACON PIGS (6 pigs entered by their respective Breed Societies).—Prize (The "Whitley" Challenge Cup) to The British Berkshire Pig Society.

Class 83.—BACON PIGS, PEDIGREE (2 pigs entered by Breeders).—*First Prize* (Silver Medal) to W. White & Sons (Large White). *Second Prize* (Bronze Medal) to Lord Sherborne (Gloucestershire Old Spot).

Class 84.—BACON PIGS—FIRST CROSS (2 pigs entered by Breeders).—*Prize* (The "Bledisloe" Bacon Challenge Cup) to Lord Bledisloe, K.B.E. (Middle White and Large Black).

Class 85.—COLONIAL (4 sides).—*First Prize* (Silver Medal) to Gunns, Ltd., Canada. *Second Prize* (Bronze Medal) to The Farmers' Co-operative Bacon Factory, Ltd., South Africa.

HAMS.

Class 86.—PALE DRIED (4 hams, long cut, of Winter or Spring cure, not over 14 lbs. weight).—*First Prize* (Silver Medal) to W. H. Smart & Co., Ltd. *Second Prize* (Bronze Medal) to Palethorpes, Ltd.

Class 87.—PALE DRIED (4 hams, long cut, of Winter or Spring cure, over 14 lbs. weight).—*First Prize* (Silver Medal) to W. H. Smart & Co., Ltd. *Second Prize* (Bronze Medal) to T. Foster.

Class 88.—SMOKED (4 hams, long cut, mild cured, not over 10 weeks cured, not over 15 lbs. weight).—*First Prize* (Silver Medal) to M. Venner & Sons, Ltd. *Second Prize* (Bronze Medal) to W. H. Smart & Co., Ltd.

Class 89.—PALE DRIED (4 hams, long cut, mild cured, not over 10 weeks cured, over 15 lbs. weight).—*First Prize* (Silver Medal) to Palethorpes, Ltd. *Second Prize* (Bronze Medal) to John A. Hunter & Co., Ltd.

Class 90.—FOUR HAMS (cured in Ireland).—No entry.

Class 91.—TWO HAMS (cured in the Farmhouse or Home; dealers and professional bacon curers not eligible).—Cancelled.

Class 92.—SELLING CLASS (2 hams, any variety).—*First Prize* (£2) to T. Foster. *Second Prize* (£1) to W. H. Smart & Co., Ltd. *Third Prize* (10s.) to J. Johnson.

BUTTER.

Class 93.—SLIGHTLY SALTED. Open only to farmers, their wives, sons and daughters, occupying not exceeding 100 acres, and who have never won a prize in the Butter Classes at any of the Association's Shows; 2 lbs. in 1-lb. lumps (brick shape).—*First Prize* (£3) to Miss S. Dawson. *Second Prize* (£2) to Mrs. W. J. Dart. *Third Prize* (£1) to Mrs. R. J. Dunstan. *Fourth Prize* (10s.) to Miss E. G. Burlton. *Fifth Prize* (5s.) to Mrs. L. T. Morris.

Class 94.—PERFECTLY FREE FROM SALT (the produce of Channel Islands' Cattle and their Crosses; 2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) to The Earl of Mount Edgumbe. *Second Prize* (£2) to T. R. Bolitho. *Third Prize* (£1) to Mrs. L. R. Mildon. *Fourth Prize* (10s.) to Mrs. L. Matthews. *Fifth Prize* (5s.) to the Trewithen Dairy.

Class 95.—SLIGHTLY SALTED (the produce of Channel Islands' Cattle and their Crosses; 2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) to The Earl of Mount Edgumbe. *Second Prize* (£2) to Mrs. L. Matthews. *Third Prize* (£1) to Mrs. L. R. Mildon. *Fourth Prize* (10s.) to Miss B. F. Pascoe. *Fifth Prize* (5s.) to T. R. Bolitho.

Class 96.—PERFECTLY FREE FROM SALT (the produce of Shorthorn and other Cattle and their Crosses (except Channel Islands and their Crosses); 2 lbs. in 1-lb. lumps, brick shape). *First Prize* (£3) and B.D.F.A. Cup to Mrs. L. R. Mildon. *Second Prize* (£2) to Mrs. N. Field. *Third Prize* (£1) to Mrs. A. A. Bere. *Fourth Prize* (10s.) to Lady K. Curzon-Herrick. *Fifth Prize* (5s.) to Mrs. S. Beadle.

- Class 97.—SLIGHTLY SALTED (the produce of Shorthorn and other Cattle and their Crosses (except Channel Islands and their Crosses); 2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) to Mrs. L. R. Mildon. *Second Prize* (£2) to Capt. K. C. Livingstone-Learmouth. *Third Prize* (£1) to Mrs. A. A. Bere. *Fourth Prize* (10s.) to Miss W. D. Carter. *Fifth Prize* (5s.) to Mrs. W. J. Dart.
- Class 98.—FREE FROM SALT OR SLIGHTLY SALTED, at the discretion of the Exhibitor, to be made from Scalded Cream only (2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (3) to The Earl of Mount Edgcumbe. *Second Prize* (£2) to Mrs. L. R. Mildon. *Third Prize* (£1) to Miss B. F. Pascoe. *Fourth Prize* (10s.) to Mrs. B. C. Clarke. *Fifth Prize* (5s.) to Mrs. N. Field.
- Class 99.—FREE FROM SALT (24-lb. boxes of 12 rolls).—*First Prize* (£3) to The Ida Co-operative Creamery, Ltd. *Second Prize* (£2) to Sandford & Stacey. *Third Prize* (£1) to The Egginton Dairy Co., Ltd. *Fourth Prize* (10s.) to The Springfield Co-operative Dairy Ltd.
- Class 100.—MILD CURED (Slightly Salted in 24-lb. boxes of 24 rolls).—*First Prize* (£3) to The Ballyrashane Co-operative Dairy, Ltd. *Second Prize* (£2) to The Ida Co-operative Creamery, Ltd. *Third Prize* (£1) to The Springfield Co-operative Dairy, Ltd. *Fourth Prize* (10s.) to The Oola Co-operative Creamery, Ltd.
- Class 101.—CURED (Slightly Salted, 28 lbs.).—*First Prize* (£3) to the Ballyrashane Co-operative Dairy, Ltd. *Second Prize* (£2) to The Macamore Co-operative Creamery. *Third Prize* (£1) to The Springfield Co-operative Dairy, Ltd. *Fourth Prize* (10s.) to The Ida Co-operative Creamery, Ltd.
- Class 102.—CURED (56 lbs.).—*First Prize* (£3) to the Ballyrashane Co-operative Dairy, Ltd. *Second Prize* (£2) to The Toher Co-operative Dairy Society, Ltd. *Third Prize* (£1) to The Oola Co-operative Creamery, Ltd. *Fourth Prize* (10s.) to The Ardagh Co-operative Dairy.
- Class 103.—FANCY OR ORNAMENTAL DESIGN (with foliage or other extraneous decoration).—*First Prize* (£3) to Miss H. M. Trenchard. *Second Prize* (£2) to Miss E. Bush. *Third Prize* (£1) to Mrs. F. W. Bromfield.
- Class 104.—FANCY OR ORNAMENTAL DESIGN (without extraneous decoration, adapted for table use).—*First Prize* (£3) to Miss H. M. Trenchard. *Second Prize* (£2) to Miss E. Bush. *Third Prize* (£1) to Mrs. F. W. Bromfield.

COLONIAL BUTTER.

- Class 105.—SALTED (one box containing not less than 56 lbs.).—*First Prize* (Gold Medal) to The Casino Co-operative Dairy Co., Ltd. *Second Prize* (Silver Medal) to R. J. Finlayson, Ltd. *Third Prize* (Bronze Medal) to The Manning River Co-operative Dairy Co., Ltd.
- Class 106.—UNSALTED (one box containing not less than 56 lbs.).—*First Prize* (Gold Medal) to the Kyogle Co-operative Dairy Co., Ltd. *Second Prize* (Silver Medal) to The South Australian Farmers' Co-operative Union, Ltd. *Third Prize* (Bronze Medal) to The Southern Queensland Co-operative Dairy Co., Ltd.

CREAM.

- Class 107.—CLOTTED.—*First Prize* (£2 2s. and Silver Medal) to W. Beer. *Second Prize* (£1 1s. and Bronze Medal) to Mrs. P. Jones.
- Class 108.—OTHER THAN CLOTTED.—*First Prize* (£2 2s. and Silver Medal) to S. P. Snewin. *Second Prize* (£1 1s. and Bronze Medal) to H. Knowles.

BOTTLED FRUIT, VEGETABLES, AND JAMS.

- Class 109.—SIX BOTTLES OF SOFT FRUIT, of not less than 4 Varieties (Rhubarb admitted).—*First Prize* (£2) to Mrs. M. E. Parlour. *Second Prize* (£1) to The Horticultural College, Swanley. *Third Prize* (10s.) to G. W. Weatherell.

- Class 110.—SIX BOTTLES OF STONE FRUIT, of not less than 4 Varieties (Apples and Pears admitted).—*First Prize* (£2) and Silver Medal to Mrs. W. H. Morton. *Second Prize* (£1) to Mrs. R. F. Hearnshaw. *Third Prize* (10s.) to Mrs. M. E. Parlour.
- Class 111.—THREE BOTTLES OF SOFT FRUIT, distinct.—*First Prize* (£1) to The Cathedral Dairy. *Second Prize* (10s.) to Mrs. W. H. Morton. *Third Prize* (7s. 6d.) to Mrs. R. F. Hearnshaw.
- Class 112.—THREE BOTTLES OF STONE FRUIT, distinct.—*First Prize* (£1) to The Horticultural College, Swanley. *Second Prize* (10s.) to The Cathedral Dairy. *Third Prize* (7s. 6d.) to Miss D. M. Johnson.
- Class 113.—SIX BOTTLES OF VEGETABLES, of not less than 4 Varieties (Tomatoes admitted).—*First Prize* (£2) to The Horticultural College, Swanley. *Second Prize* (£1) to Mrs. M. E. Parlour. *Third Prize* (10s.) to Mrs. R. F. Hearnshaw.
- Class 114.—THREE BOTTLES OF VEGETABLES, distinct.—*First Prize* (£1) to The Horticultural College, Swanley. *Second Prize* (10s.) to Mrs. R. F. Hearnshaw. *Third Prize* (7s. 6d.) to Miss D. M. Johnson.
- Class 115.—THREE JARS OF JAM (1-lb. each, dissimilar, any Variety).—*First Prize* (£1) to The Horticultural College, Swanley. *Second Prize* (10s.) to The Cathedral Dairy. *Third Prize* (7s. 6d.) to A. L. Nator & Co. Ltd.
- Class 116.—COMBINED EXHIBIT OF BOTTLED FRUITS, VEGETABLES, JAMS, FRUIT JELLIES, PICKLES AND CHUTNEYS, open only to Women's Institutes. To consist of 3 bottles of Soft Fruit, 3 bottles of Stone Fruit, 3 bottles of Vegetables, 3 1-lb. jars of Jam, 3 jars of Pickles, or 3 jars of Chutney. All exhibits to be shown in glass containers and to be of not less than two varieties.—*First Prize* (£5) to The Croft Women's Institute. *Second Prize* (£3) to The West Malling Women's Institute. *Third Prize* (£2) to The St. Weonard's Women's Institute.

HONEY, WAX, &c.

- Class 117.—SIX JARS OF LIGHT-COLOURED EXTRACTED HONEY (1 lb. each approximate weight).—*First Prize* (£1) to F. Humphreys. *Second Prize* (15s.) to D. J. Griffiths & H. Aubrey. *Third Prize* (12s. 6d.) to J. Birkett. *Fourth Prize* (10s.) to J. E. Swaffield.
- Class 118.—SIX JARS OF MEDIUM-COLOURED EXTRACTED HONEY, other than Heather Honey (1 lb. each approximate weight).—*First Prize* (£1) to J. Gordon & Sons. *Second Prize* (15s.) to Robson & Cessford. *Third Prize* (12s. 6d.) to C. Robinson. *Fourth Prize* (10s.) to E. C. R. White.
- Class 119.—SIX JARS OF DARK-COLOURED EXTRACTED HONEY, including any Variety of Heather Mixture (1 lb. each approximate weight).—*First Prize* (£1) to E. C. R. White. *Second Prize* (15s.) to W. Trinder. *Third Prize* (10s.) to J. Gordon & Sons.
- Class 120.—SIX JARS OF GRANULATED HONEY, of 1922 or any previous year (1 lb. each approximate weight).—*First Prize* (£1) to F. Humphreys. *Second Prize* (10s.) to J. E. Swaffield. *Third Prize* (7s. 6d.) to J. Gordon & Sons.
- Class 121.—SIX SECTIONS OF HONEY, other than Heather (size $4\frac{1}{2}$ by $4\frac{1}{2}$, 1 lb. each approximate weight).—*First Prize* (£1) to J. Scott. *Second Prize* (15s.) to G. Bryden. *Third Prize* (10s.) to C. W. Dyer.
- Class 122.—DISPLAY OF COMB AND EXTRACTED HONEY, of any year (approximately 100 lbs. in weight, shown on a space of 3 ft. by 3 ft.).—*First Prize* (£5) to G. A. Taylor. *Second Prize* (£2) to F. Humphreys. *Third Prize* (£1) to J. Silver.
- Class 123.—WAX (not less than 2 lbs. in 2 cakes only; the produce of the Exhibitor's Apiary; extracted and cleaned by the Exhibitor or his Assistants).—*First Prize* (15s.) to E. C. R. White. *Second Prize* (10s.) to C. Robinson. *Third Prize* (7s. 6d.) to G. Davis.

Class 124.—WAX (not less than 3 lbs.; the produce of the Exhibitor's Apiary; extracted and cleaned by the Exhibitor or his Assistants; to be shown in shape, quality and package suitable for the retail trade).—*First Prize* (15s.) to G. Davis. *Second Prize* (10s.) to E. C. R. White. *Third Prize* (7s. 6d.) to F. Humphreys.

Class 125.—INTERESTING AND INSTRUCTIVE EXHIBIT OF A PRACTICAL OR SCIENTIFIC NATURE, connected with BEE CULTURE, not mentioned in the foregoing classes.—*First Prize* (15s.) to G. Bryden, for "Natural Grown Pollen from the Cedar Atlantica Tree." *Second Prize* (10s.) to W. Trinder, for "Swarm of Bees in Cluster." *Third Prize* (5s.) to E. H. Taylor, Ltd., for "Honey Extractor."

Class 126.—THREE VESSELS OF COLONIAL EXTRACTED HONEY, as imported.—*First Prize* (Silver Medal) to The Ontario Bee-keeper's Association. *Second Prize* (Bronze Medal) to H. Leclerc.

ROOTS.

Class 127.—SIX SPECIMENS OF GLOBE MANGOLDS, drawn from a crop of not less than two acres.—*First Prize* (£3) to D. Thomas. *Second Prize* (£2) to J. James. *Third Prize* (£1) to N. J. Nunnerley.

Class 128.—SIX SPECIMENS OF GOLDEN TANKARD MANGOLDS, YELLOW FLESHED, drawn from a crop of not less than two acres.—*First Prize* (£3) to T. Chettle. *Second Prize* (£2) to W. Watts. *Third Prize* (£1) to J. James.

Class 129.—SIX SPECIMENS OF INTERMEDIATE MANGOLDS, drawn from a crop of not less than two acres.—*First Prize* (£3) to W. Watts. *Second Prize* (£2) to D. Thomas. *Third Prize* (£1) to T. Chettle.

Class 130.—SIX SPECIMENS OF SWEDES, PURPLE TOP, drawn from a crop of not less than two acres.—*First Prize* (£3) to D. Thomas. *Second Prize* (£2) to R. Thomas. *Third Prize* (£1) to C. Bragg.

Class 131.—SIX SPECIMENS OF SWEDES, BRONZE TOP, drawn from a crop of not less than two acres.—*First Prize* (£3) to W. Davidson. *Second Prize* (£2) to W. Edwards. *Third Prize* (£1) to R. Thomas.

Class 132.—SIX SPECIMENS OF SWEDES, GREEN TOP, drawn from a crop of not less than two acres.—*First Prize* (£3) to J. James. *Second Prize* (£2) to W. Watts. *Third Prize* (£1) to W. Davidson.

Class 133.—SIX SPECIMENS OF TURNIPS, any one Variety, drawn from a crop of not less than two acres. *First Prize* (£3) to T. W. Turnbull. *Second Prize* (£2) to W. Watts. *Third Prize* (£1) to D. Thomas.

Class 134.—SIX SPECIMENS OF CABBAGE, drawn from a crop of not less than two acres.—*First Prize* (£3) to J. A. Wright. *Second Prize* (£2) to T. Chettle. *Third Prize* (£1) to P. Perry.

Class 135.—SIX SPECIMENS OF KOHL-RABI, drawn from a crop of not less than two acres.—*First Prize* (£3) to T. Chettle. *Second Prize* (£2) to W. Watts. *Third Prize* (£1) to P. Perry.

Class 136.—COLLECTION OF ROOTS, &c., FOR CATTLE-FEEDING IN WINTER. To consist of six specimens of not exceeding ten Varieties in as many distinct Types as possible.—*First Prize* (£5) to W. Watts. *Second Prize* (£3) to P. Perry. *Third Prize* (£2) to T. Bowden.

COLONIAL PRODUCE.

Class 137.—COLLECTION OF COLONIAL DAIRY PRODUCE, to include Bacon, Dead Poultry and Eggs.—Prize (Gold Medal) to the Government of Ontario.

INVENTIONS.

Class 138.—ANY NEW APPARATUS OR INVENTION RELATING TO THE DAIRY INDUSTRY, OR ONE SHOWING DISTINCT AND PRACTICAL IMPROVEMENT ESPECIALLY AS TO SAVING LABOUR, not eligible for competition in any other Class, and not previously exhibited in competition at the Dairy Show.—*Silver Medal* to Vipan & Headley, for "Steam Driven Bottle-washing Machine for Milk Bottles"; The Dairy Outfit Co., Ltd., for "300-gallon capacity Standard Positive Retarder"; The Dairy Supply Co., Ltd., for "Automatic Eight-measure Bottle-Filling Machine"; Cox & Sons, for "Persoon's Electric Driven Cream Separator"; A. Grabham & Co., for "Revolving Jet Brushes"; Sutherland Thomson & Co., for "Method of Testing Milk and Cream for Fat"; F. G. Phillips & Son, Ltd., for "Positive Holder Retarder." *Bronze Medal* to Day & Day, for "Improved Pram for Bottled Milk Delivery"; Sutherland, Thomson & Co., for "Automatic Ventilator for Hand and Power Butter Churns"; Sutherland, Thomson & Co., for "Method of Testing Milk for Impurities"; A. J. Clare, for "One-piece Milkers' Overall-Vanchic"; De Laval Chadburn Co., Ltd., for "Internal 'Easyclean' Cooler or Refrigerator for Milk and other Liquids"; Capts. E. & A. Carlton, for "Patent Combined Milk-stool Pail"; B. J. Fry, for "Improved Butter-moulding Machine"; C. D. Gabell & Co., for "Milk Sterilizer."

JUNKET-MAKING CONTESTS.

Class 139.—JUNKET MADE WITH MILK AND CREAM.

SECTION A.—*First Prize* (£2) to Miss P. E. Jackson. *Second Prize* (£1) to Miss F. M. Eckley. *Third Prize* (10s.) to Miss D. M. Williams.

SECTION B.—*First Prize* (£2) to Miss J. Smith. *Second Prize* (£1) to Miss E. J. Edwards. *Third Prize* (10s.) to Miss M. Jones.

Class 140.—CHAMPION CONTEST.—*Prize* (Silver Medal) to Miss P. E. Jackson.

BUTTER-MAKING CONTESTS.

Class 141.—Open to those who have never won a Prize at any Show wherever held.

SECTION A.—*First Prize* (£3) to Miss W. B. Cook. *Second Prize* (£2) to Miss R. M. Brinkler. *Third Prize* (£1) to Miss M. R. Turner.

SECTION B.—*First Prize* (£3) to Miss K. Rogers. *Second Prize* (£2) to Miss L. Eckley. *Third Prize* (£1) to Miss E. G. Woodcock.

SECTION C.—*First Prize* (£3) to Miss F. Taylor. *Second Prize* (£2) to Miss E. D. Watson. *Third Prize* (£1) to Miss M. Thomas.

Class 142.—Open to Students who have attended Classes at the British Dairy Institute, Reading, for not less than one month during the past two years.

SECTION A.—*First Prize* (£3) to Miss W. B. Cook. *Second Prize* (£2) to R. C. Smith. *Third Prize* (£1) to Miss N. J. Clark.

SECTION B.—*First Prize* (£3) to Miss M. R. Turner. *Second Prize* (£2) to Miss R. M. Brinkler. *Third Prize* (£1) to W. B. P. Gates.

Class 143.—Open Contest for Men and Women.

SECTION A.—*First Prize* (£3) to Miss E. G. Woodcock. *Second Prize* (£2) to Miss K. Rogers. *Third Prize* (£1) to Miss M. B. Archer.

SECTION B.—*First Prize* (£3) to Miss G. John. *Second Prize* (£2) to Miss J. Smith. *Third Prize* (£1) to Miss A. M. Gwynne.

SECTION C.—*First Prize* (£3) to Miss M. K. Stratton. *Second Prize* (£2) to Miss C. M. Mortimer. *Third Prize* (£1) to Miss P. E. Jackson.

SECTION D.—*First Prize* (£3) to Miss E. M. Price. *Second Prize* (£2) to Miss J. M. Vincent. *Third Prize* (£1) to Mrs H. Watson.

Class 144.—Open to First Prize Dairy Show Winners of 1923.—*First Prize* (£3 and Silver Medal) to Miss M. K. Stratton. *Second Prize* (£2) to Miss E. G. Woodcock. *Third Prize* (£1) to Miss W. B. Cook.

Class 145.—CHAMPION CONTEST (open to Winners of First Prizes in the preceding Classes or at any Shows of The British Dairy Farmers' Association, Champions of any year excepted).—*First Prize* (Gold Medal) to Mrs. M. Pooley. *Second Prize* (£3) to Miss E. James. *Third Prize* (£2) to Miss M. K. Stratton.

MILKERS' CONTEST.

Class 146.—Open to Men and Women of 18 years and over.—*First Prize* (£7 each) to Miss Buchanan. *Second Prize* (£4) to F. J. Temple. *Third Prize* (£3) to H. Watson. *Fourth Prize* (£2) to W. H. Slater. *Equal Fifth Prize* (£1 each) to Mrs. C. Bennetts and W. J. Moss.

Class 147.—Open to Boys and Girls under 18 years.—*First Prize* (£7) to Miss D. L. Jones. *Second Prize* (£4) to A. Logan, junr. *Third Prize* (£3) to Miss E. E. Potts. *Fourth Prize* (£2) to Miss F. Taylor. *Fifth Prize* (£1) to F. W. Curtis.

Class 148.—CHAMPION CONTEST (open to First Prize Winners in preceding Classes or at the Shows of 1920, 1921, and 1922 of The British Dairy Farmers' Association, Champions of any year excepted).—Prize (Gold Medal and £2) to Miss Buchanan.

COW-JUDGING CONTEST.

Class 149.—Open to Teams of Students from Agricultural Colleges and Farm Institutes.—Prize (B.D.F.A. Challenge Bowl) to The University College, Reading, and Bronze Medals to B. J. Fricker, Miss S. Nepean, and A. L. Stickland as the Students of Winning Team.

THE British Dairy Farmers' Association.

THE OBJECTS OF THE ASSOCIATION

are the improvement of

DAIRY STOCK AND DAIRY PRODUCE,

by encouraging the Breeding and Rearing of Stock for the special purpose of the Dairy; a larger and better production of Milk, Butter, Cheese, and Eggs; the Erection of Improved Dairy Buildings, and the Invention of New or Improved Dairy Utensils, Machinery, Implements, and Scientific Appliances. The Association also stimulates the Breeding and Rearing of Poultry, &c. By means of Papers in the Society's *Journal* (published annually), Annual Conferences in different dairy districts, Lectures, and Discussions, and in other ways, efforts are continually being made to disseminate a more thorough knowledge of Dairy husbandry. Moreover, prompt action is taken by the Association for the protection of the interests of Dairy Farmers in the event of their being threatened by legislation or by Departmental Orders.

Prizes to the value of about £3,500 are annually offered for competition at the Dairy Show, held at the Royal Agricultural Hall, Islington, London.

It is difficult to over-estimate the importance and need of greater attention being paid to the Dairy industry. It is admitted that by improved modes of managing Milk and its products, the wealth obtained from the Milch Cows of the country could be increased most materially. The Council, therefore, appeal to Agriculturists of all classes, and Dairy Farmers in particular, to become Members of the Association, and practically aid in developing its usefulness.

The advantages of Membership comprise:—

- 1.—A free pass to all the Society's Dairy Shows, available each day during the Exhibition, with the privilege of admitting free (by ticket) a friend on any one day.
- 2.—The privilege of participating at specially low charges in the Dairy Conferences at home or abroad, organised by the Association.
- 3.—The Exhibition of Live Stock, Dairy Produce, and Utensils, at a reduced scale of fees to those whose subscriptions for the past three years and current year are paid.
- 4.—A copy (free by post) of the *Journal* of the Association, published annually.
- 5.—Analyses by the Analytical and Consulting Chemist, at low fees, of samples of milk, cream, butter, cheese, feeding stuffs, water, soil, manures, &c., and advice on dairy matters connected with his Department.

- 6.—Professional advice and assistance at a reduced scale of charges, in any case of disease among the live stock of the farm.
- 7.—Examinations by the Consulting Pathological Bacteriologist, for particular pathogenic or disease-producing organisms.
- 8.—Investigations by the Consulting Dairy Bacteriologist into the cause of trouble or taints in dairy produce.
- 9.—In any case of hardship due to administration of legal or other regulations, Members are recommended to at once send details of such case to the Secretary, who will submit them to the Committee appointed to deal with such matters, after when advice and assistance will be given by the Association.

The Annual Subscription is £1, but Dairy Instructors and Students are admitted on payment of 10s. 6d. per annum. The latter sum entitles Dairy Instructors to all privileges, except the reduced fees for exhibition at the Shows.

Members' Veterinary Privileges.

Members of the Association who require professional assistance in any case of disease among their animals must apply direct to the Consulting Veterinary Surgeon, Professor G. H. WOOLDRIDGE, Royal Veterinary College, Camden Town, London, N.W. 1, whose scale of charge is as follows:—

	£	s.	d.
Personal Consultation	0	10	6
Post-mortem Examination and Report	0	10	6
Consultation by Letter	0	5	0
Visit and Report, in case of an outbreak of disease, in addition to personal and travelling expenses, per day	2	2	0

Members' Botanical Privileges.

The Council have fixed the following rates of charge for the examination of Plants and Seeds for the *bonâ fide* and individual use and information of Members of the Association (not being Seedsmen), who are particularly requested to mention the kind of examination they require, and to quote its number in the subjoined Schedule.

No.	£	s.	d.
1.—A Report on the purity, and amount of nature of foreign materials, of a sample of seed	0	1	0
2.—A Report on the perfectness and germinating power of a sample of seed Nos. 1 and 2 together	0	1	6
3.—Determination of the species of any weed or other plant, or of any epiphyte or vegetable parasite, with a report on its habits, and the means for its extermination or prevention	0	1	0
4.—Report on any disease affecting farm crops	0	1	0
5.—Determination of the species of a collection of natural grasses found in any district, with a report on their habits and pasture value ...	0	4	0

CHEESE.							£ s. d.
Estimation of Water, Fat, Casein, and Ash ...	...	...	...	...	...	...	0 12 6
Examination for Foreign Fats (extra)...	...	...	...	...	...	...	0 10 6
RENNET.							
Examination of Strength ...	...	...	...	...	...	...	0 7 6
CAKES AND MEALS							
Estimation of Oil only ...	...	...	...	...	...	...	0 7 6
Estimation of Oil, Albuminoids, Carbo-hydrates, &c.	...	...	...	...	...	...	0 15 0
GRASS, SILAGE, ROOTS, &c.							
Estimation of Oil, Albuminoids, Carbo-hydrates, &c.	...	...	...	...	...	...	1 10 0
MANURES.							
Estimation of Soluble Phosphoric Acid ...	...	...	...	...	...	...	0 7 6
Estimation of Soluble and Insoluble Phosphoric Acid ...	...	...	...	...	...	...	0 10 0
Estimation of Citric Soluble Phosphoric Acid ...	...	...	...	...	...	...	0 10 0
Estimation of Nitrogen...	...	...	...	...	...	...	0 7 6
Estimation of Potash ...	...	...	...	...	...	...	0 7 6
SOIL.							
Estimation of Lime ...	...	...	...	...	...	...	0 7 6
Analysis and Report ...	...	...	...	...	...	...	2 2 0
WATER.							
Analysis for Drinking or Dairy Purposes ...	...	...	...	...	...	...	1 1 0
POISONS.							
Examination of a Substance for Mineral Poisons ...	...	...	...	...	...	...	2 2 0
Examination for Organic Poisons (Alkaloids, &c.) ...	...	...	...	...	...	...	3 3 0
CIDER AND FERMENTED DRINKS.							
Estimation of Alcohol ...	...	...	...	...	...	...	0 7 6
Estimation of Alcohol, Sugar, Acidity, &c. ...	...	...	...	...	...	...	0 15 0
PRESERVATIVES.							
Examining a Substance for Boracic Acid or Salicylic Acid, &c., for each Substance sought...	...	...	...	...	...	...	0 2 6
Estimation of the quantity of Boracic Acid ...	...	...	...	...	...	...	0 10 6
Analysis of a Preservative ...	...	...	...	...	...	...	1 1 0
CONSULTATION							
For Letter in reply to Enquiry ...	...	...	...	...	...	...	Free
For Personal Interview ...	...	...	...	...	...	...	0 10 6
For Special Consultation ...	...	...	...	...	...	...	1 1 0

NOTE.—The Consulting Chemist will be prepared to quote reduced terms to members requiring a number of analyses at frequent intervals.

Instructions for Taking Fair Samples for Analysis.

Dairy Produce.—Milk should be sent in a well-corked 8-oz. clear bottle. The milk should quite fill the bottle. Butter or cheese, about 8 ounces; the former in a gallipot well tied down.

Soils.—A block of soil about four or five inches square, and nine inches deep, should be sent in a strong box by rail.

INVESTIGATIONS BY Mr. T. J. DRAKELEY, Ph.D., M.Sc., F.I.C., F.C.S.,
M.I.M.E., 28, Russell Square, London, W.C. 1, INTO THE CAUSES
OF TROUBLE OR TAINTS IN MILK, CREAM, BUTTER, OR CHEESE.

MILK.	£ s. d.		
Microscopical examination	1	1	0
Microscopical and cultural examination for a particular organism ...	2	2	0
Experimental and cultural examination for a particular organism	5	5	0
	10	10	0

CREAM, BUTTER, CHEESE.

Microscopical examination	1	1	0
Microscopical and cultural examination...	2	2	0

PASTEURIZED OR STERILIZED MILK.

Microscopical examination for bacteria	0	5	0
Estimating number of bacteria present	0	15	0
Cultural examination of bacteria present	2	2	0

Directions for Sending Samples.

Samples of milk or water (one quart) and cream (half pint) should be forwarded in wide-mouthed stoppered bottles which have previously been thoroughly cleaned, and then rinsed several times with very hot, almost boiling, water.

Butter is best sent in a $\frac{1}{2}$ -lb. brick or roll, just as it was made up, wrapped in grease-proof paper, and packed in a box.

If the *Cheese* is small, send a whole one; otherwise forward a square block of not less than one pound and not a wedge-shaped piece. Wrap in grease-proof paper and pack in a box.

All samples should be sent by the speediest method possible. They ought not to arrive either on Saturday or Sunday.

Samples to be examined for disease-producing organisms should be forwarded to Dr. Andrewes, Pathological Laboratory, St. Bartholomew's Hospital, London, E.C. 1. Members are requested to note that in the case of examination for the tubercle bacillus the method of animal inoculation, which experience has shown to be the only reliable one, will be alone used. It is impossible to carry out the process of sedimentation necessary for the detection of tubercle bacillus in milk which is received in a curdled condition. The report cannot be sent for a period of four to six weeks from the time the sample is received, but in the case of other pathogenic organisms the time required is much shorter. Samples to be examined for organisms producing taints in dairy produce should be forwarded to Mr. T. J. DRAKELEY, Ph.D., M.Sc., F.I.C., F.C.S., M.I.M.E., 28, Russell Square, London, W.C. 1.

THE BRITISH DAIRY INSTITUTE, READING.

The British Dairy Institute was established at Aylesbury in 1888, by the British Dairy Farmers' Association, and several hundred Students were successfully trained there in different branches of dairy work. In order that Students might have an opportunity of combining with the practical study of dairying a more complete scientific instruction, the Institute was, in 1896, moved to Reading, and placed under the management of a Committee representing the British Dairy Farmers' Association and the University College, Reading.

The Institute contains large milk-receiving, butter-making, and milk-testing rooms; rooms for the manufacture of pressed, unpressed, and soft cheeses; and rooms for the ripening and drying of different varieties of cheese; besides reading, lecture, and common rooms. It is equipped with the best modern apparatus for the manufacture of dairy produce, including power-driven separating and buttermaking plant, and cold storage plant.

The instruction given is both practical and theoretical, and is arranged to suit the requirements of those who need either elementary or advanced dairy instruction, or who wish to perfect themselves in the manufacture of any special variety of dairy produce. Instruction is provided for students who wish to specialize in Bacteriology or Chemistry applied to dairying.

The Institute is open throughout the year, except during the Winter Vacation of eight weeks, which commences about the middle of November.

The Courses at the Institute are open to men and women above the age of 16 years. Students may join at any time while the Institute is open, and for any period not less than a week, but those who desire to take a thorough short course in buttermaking or cheesemaking are recommended to attend the Six Months' or Three Months' Joint Course in Dairying.

The manufacture of hard-pressed and soft cheeses is taught during the whole of the time when the Institute is open, but Stilton and other blue-veined varieties are not made until May.

Instruction is given in buttermaking, clotted-cream making, the testing and analysis of milk, the management of various types of separators, the handling and care of milk, and the preparation of starters, &c. Lectures and demonstrations are usually given in the afternoons, the mornings being chiefly devoted to practical dairy work.

Practical and theoretical instruction in buttermaking and cheesemaking (including hard-pressed, blue-veined, and soft cheese), £1 per week; £10 for three months; £18 for six months.

Practical and theoretical instruction in buttermaking only, 10s. per week (or part of week).

A full Prospectus will be sent on application to the Secretary, British Dairy Institute, Reading.

B. RAVENSCROFT,
Secretary, B.D.F.A.

28, Russell Square, London, W.C. 1.

Forty-eighth Half-yearly Report of the Council presented to the Members at the Meeting held at the Dairy Show, Royal Agricultural Hall, Islington, London, N.1, on Wednesday, October 24th, 1923.

Although the Membership of the Association is steadily increasing, it is certainly in need of an individual push, and to that end you are earnestly entreated to persuade your friends to apply for Membership. Only by individual effort can the Membership be economically raised to that degree where the Educational side of the Association's work is self-supporting.

You will be pleased to know that the Annual Dairy Show has this year again beaten its own record. Its cattle entries are greater than ever—and this, in spite of the fact that only milk-recorded cows are eligible for entry. The enlargement of the Royal Agricultural Hall is a matter for jubilation, as next year it will mean an addition of several thousand feet at the Association's disposal.

The support given by your Council to the National Milk Publicity Scheme has been justified by the success of that scheme, and the £50 loaned towards preliminary expenses has been returned by the National Milk Publicity Council.

By the vote of the Members at the Annual Meeting held in March last, Council Members were granted part railway fares when attending Council Meetings. It is yet early to state that this departure has resulted in great benefits, but it has certainly been noticeable that Council attendances have increased.

The death of Mr. F. J. Lloyd, Consulting Chemist and Dairy Bacteriologist, is a great loss to your Council. In all matters pertaining to the science of Dairying his opinion was of the greatest value, and at a time when new theories are rife, the absence of one whose experience was of the older school is keenly felt.

The decision of Colonel A. S. Barham not to seek re-election to the Council leaves a vacancy not easily filled, and your Council hope that future circumstances may render it possible to again acquire his services.

The Combined Dairy (Education) Committee, initiated by your Council at the Dairy Show, 1921, has just delivered its Report on the direction in which the conditions regulating the training and examinations for the various Certificates and Diplomas require amendment. Its recommendations are wide, and if given effect to should place Dairy Education upon a rock foundation.

The Report has been referred to the Education Committee of this Association.

An effort has been made this year to foster Milking Competitions in each County with a view that the best County Milkers may meet at the Dairy Show and vie for Championship honours. It is regretted that many Counties have shown indifference, but it is hoped that the exclusion from the Dairy Show of milkers in such Counties may prove a factor in the initiation of these much-needed competitions.

The usual Examinations have been held at Reading, Chelmsford, and Somerset, and the very few failures for the Diploma and Certificates testify to the high standard of Dairy education now prevailing throughout the country—a standard which your Association has done much to create.

The Medal Distribution Scheme continues to attract numerous applications from County and Local Shows.

A Dairy Conference was held in Denmark last May, the memory of which will live long in the minds of those who attended. A full report of this Conference has been specially written to form Part 2 of Journal, Vol. 35.

It was decided that the Danish Minister for Agriculture, Th. Madsen-Mygdal and Prof. O. Ellinger be elected Honorary Members of the Association in recognition of the valuable services rendered in connection with this Conference.

The July Meeting of the Council was held at the University College, Reading, and was followed by a tour of inspection of the Dairy Institute, College Farm and Herd, and New Research Institute Buildings and Farm. The whole tour was greatly enjoyed, and the Council left with a most favourable impression of all it had seen. The Council have since been informed that new buildings have been commenced, which when finished will greatly increase the accommodation provided at the British Dairy Institute.

Your President, Viscount Elveden, retires this year from the Presidency, which he has occupied since January, 1922. The Council are more than grateful to his Lordship for the interest he has taken in the Association, and sincerely trust that he will long be identified with its activities.

Major J. A. Morrison, D.S.O., has generously allowed his name to go forward as President-elect, 1924, and your vote will be asked in support of his candidature.

The following list of Vice-Presidents has been prepared, for which your approval will be sought :—

The Marquess of Crewe, K.G., Crewe Hall, Crewe.
Lord Kenyon, Gredington, Whitechurch, Salop.
Lord Strachie, Sutton Court, Pensford, Bristol.
Major Lord O'Hagan, Pyrge Park, Romford.
Lord Desborough, K.C.V.O., Taplow Court, Taplow, Bucks.
Lord Bledisloe, K.B.E., Lydney Park, Gloucestershire.
The Earl of Dartmouth, P.C., K.C.B., Patshull, Wolverhampton.
Sir Gilbert Greenall, Bart., C.V.O., Walton Hall, Warrington.
Viscount Elveden, C.B., C.M.G., M.P., Pyrford Court, near Woking.
S. Palgrave Page, J.P., 27, Oakwood Court, W.14.
John Welford, J.P., Cumberland House, Kensington, W.8.
G. Titus Barham, Sudbury Park, Wembley, Middlesex.

Members of the Council named below retire in accordance with the Articles of Association and have been proposed for re-election :—

C. G. Argles, Peterborough.
John Benson, Bedford.
Lt.-Col. Sir Merrik R. Burrell, Bart., Sussex.
Sidney Edwards, Newport, Monmouthshire.
J. T. H. Farmer, Bucks.
W. J. Grant, Monmouthshire.
W. F. Jessop, Oxfordshire.
R. Long, Bedfordshire.
W. Nisbet, Glasgow.
H. S. Holmes Pegler, Surrey.
J. Gillard Stapleton, Middlesex.

The following Candidates have been duly proposed and seconded for the Council :—

W. E. Wallace (Dairy Farmer), Eaton Bray, Dunstable, Beds, proposed by C. G. Argles, seconded by R. Long.

W. M. Colebrook (retired Dairy Farmer), Claygate, Surrey, proposed by R. McCall, seconded by Miss A. M. Doyle.

James Sadler (retired Dairy Farmer), Holmleigh, Wistaston, Nantwich, proposed by W. H. Hobson, seconded by William Emberton.

Stuart Heaton (Dairy Farmer), Iken, Tunstall, Suffolk, proposed by Capt. R. G. Buxton, seconded by R. Wallace.

William Rice (Publisher), Ludgate Hill, E.C., proposed by W. J. Golding, seconded by H. Corrie.

R. Fletcher-Hearnshaw (Farmer), Burton Joyce, Nottingham, proposed by Col. E. W. Caddick, seconded by W. J. Golding.

Thomas Willing (Farmer), Castle Barton, Paignton, Devon, proposed by E. P. F. Sutton, seconded by J. T. H. Farmer.

The following Resolutions have been passed :—

Annual Meeting, March 7th, 1923.

“ That the Members of the British Dairy Farmers’ Association in Annual Meeting assembled desire to strongly protest against the serious lack of proper investigation and precaution on the part of the Customs Authorities which recently resulted in the unchecked importation from the American Continent of animal feeding stuffs which had been, to the knowledge of the Ship’s Master and crew, in contact with animals affected with Foot and Mouth Disease.”

Council Meeting, April 11th, 1923.

“ That this Council declares its emphatic protest against the reported proposal of the Minister for Agriculture to admit Canadian Cattle for Breeding purposes, as being most detrimental to the live stock of Great Britain, and will neutralise the good which has been done by the Ministry in promoting Milk Recording.”

Mr. Herbert J. Page will be proposed for re-election as the Association’s Official Auditor with Messrs. P. Hay, H. Dunn, and Fred Pitts as the Honorary Auditors.

By order of the Council,

B. RAVENSCROFT,

Secretary.

28, RUSSELL SQUARE,

LONDON, W.C.1,

October, 1923.

FORTY-EIGHTH ANNUAL REPORT OF THE COUNCIL

to the General Meeting of Members,
Wednesday, 5th March, 1924.

It is again the pleasure of the Council to present you with a Balance Sheet showing a substantial profit on the year's working. The figures with regard to the investments will be most illuminating to those who recall the financial situation of 1918.

At the close of 1922 the Membership roll stood at 1,274; 166 new Members have been elected, and resignations and deaths have totalled 36, thus leaving a total Membership of 1,404, consisting of 121 Life Members, 7 Hon. Members, 1,263 Annual Members, and 13 Affiliated Societies. Although these figures show the Membership to be the highest on record, the Council feel they represent but a tithe of those whose names should appear on the Register. The act of each Member proposing one new Member a year would go far towards achieving the Council's object.

The constitution of the elected Council has undergone a slight change in that the names of Mr. James Sadler (re-elected after one year's absence) and Mr. Thomas Willing replace those of Col. A. S. Barham (retired) and Mr. Cecil Argles.

It is with great regret that the Council have to record the death of Mr. Fred Pitts, who had been one of the Hon. Auditors for so many years.

Although the entries of cattle for the Dairy Show were the highest on record, the outbreaks of Foot and Mouth Disease materially reduced the numbers actually at the Hall. Although arrangements had been made for the reception of all animals entered, the Council decided to

return in full all fees paid in respect of those prevented by Government Order from being present—a decision resulting in the return of £350 19s. 6d.

In order to stimulate the classes provided for Bacon Pigs at the Dairy Show, October 21st–24th next, the Council revised the Bacon Pig Schedule in December and this is now in circulation.

Similarly the Colonial Schedule of Prizes has been distributed throughout the Colonies.

At the invitation of the Ministry of Health, representatives from the Association gave evidence before a Committee appointed to consider the question of preservatives and colouring matter in Cream Butter and Cheese.

The work of the British Dairy Institute, Reading, has been particularly satisfactory. Lack of accommodation, however, has again necessitated the turning away of many would-be Students—a state of affairs which will be remedied by the completion of new buildings this Spring.

As a result of Examinations held at the British Dairy Institute, Reading, Cannington Court Farm Institute, Somerset, and the East Anglian Institute of Agriculture, Chelmsford, 23 Diplomas, 71 Buttermaking and 56 Cheesemaking Certificates have been granted

The Conference held in Denmark was highly successful and proved to be of great educational value. The full report that has been circulated to each Member and applied for by many Creameries and Pig-keepers has met with keen appreciation.

The Dairy Conference, 1924, is to be held in Cumberland, with Keswick as a centre. Date—June 16th–22nd. A programme is in course of preparation and will be circulated in due course.

The revision of the conditions governing the Medal Distribution Scheme has resulted in the following grants being made :—

	Silver.	Bronze.
Dairy Cattle (Recorded Cows)	7	3
Butter	3	3
Cheese	2	—
Buttermaking	1	2
Clean Milk Competition	2	—
Cow Judging Contest (Young Farmers' Club)	1	2
	<u>16</u>	<u>10</u>

The following resolutions have been passed :—

“This Association welcomes the Milk (Special Designation) Order, 1922, as an important step towards improving the conditions of the milk supply and in increasing the Public confidence in the benefits arising from a larger consumption.”

“That this Council declares its emphatic protest against the reported proposal of the Ministry of Agriculture to admit Canadian cattle for Breeding purposes as being most detrimental to the live stock of Great Britain and will neutralize the good which has been done by the Ministry in promoting Milk Recording.”

“That this Council most strongly supports the policy of slaughtering and compensation as the only efficient means of dealing with the outbreaks of foot and mouth disease.”

“This Council desires to record its profound sympathy with the Dairy Farmers in Cheshire and its surrounding area which has been so sorely afflicted by the recent serious outbreak of foot and mouth disease.”

By order of the Council,

B. RAVENSCROFT,

Secretary.

British Dairy Farmers' Association.

MEDAL SCHEME.

Special Prizes at Educational Institutions and Country Shows.

The Council of the British Dairy Farmers' Association is prepared to consider applications from Educational Centres and Approved Societies in the United Kingdom for their Gold, Silver, and Bronze Medals to be awarded in connection with dairying and dairy farming under the following conditions, viz. :—

1. All applications must be made on our official form and must clearly state the object for which the Medal or Medals are required.
2. Only one application from any Institution or Society can be considered in any one year.
3. The application must be repeated annually if Medals are again required.
4. A copy of the Proposed Prize List, showing the Conditions of the Award of the Medal and the name of the judge, should accompany the application, and the offer of a Medal cannot be confirmed until the Prize List has been approved.
5. The British Dairy Farmers' Association stipulates that no entry fee shall be charged in respect of these Medals, they being offered as Special Extra Prizes.
6. Notification of the award, with the winner's full name and address, to be forwarded to the Secretary, British Dairy Farmers' Association, 28, Russell Square, London, W.C.1, within 14 days of the award being made.
7. A person may not receive more than one Medal under this Scheme for the same subject or exhibit during any one year.

STUDENTS.—The B.D.F.A. Silver Medal for Students is reserved for those who have obtained the B.D.F.A. Diploma.

The B.D.F.A. Bronze Medals may be awarded on application to Students gaining the first position in short course Examinations and the prospectus of the course must be forwarded with the application for the Medal.

DAIRY PRODUCE AND BUTTERMILK.—The B.D.F.A. will consider applications on behalf of County or similar Shows for a Silver Medal as a Championship award.

The B.D.F.A. Bronze Medals or Certificates may be available for local Shows, and in each case shall only be awarded to the best exhibit or competitor.

CATTLE.—The B.D.F.A. Silver Medals will only be awarded at County and similar Shows to cows or heifers milk recorded under the Ministry of Agriculture Scheme.

The B.D.F.A. Silver Medals will only be awarded to Bulls out of recorded cows.

The B.D.F.A. Bronze Medals for cattle will be available only at Local Shows under similar conditions.

CLEAN MILK COMPETITIONS.—The B.D.F.A. Gold Medal may be available, on application, to the winner of clean milk competitions of six months or more duration. Silver Medals for clean milk competitions of shorter duration.

In the event of any dispute as to the interpretation of these Rules, the Council of the British Dairy Farmers' Association reserves full power of decision, and in the event of the Medal not being awarded in accordance with the above Rules and Conditions, the Council reserves the right to withhold the Medal altogether.

BY ORDER OF THE COUNCIL.

AWARDS DURING 1923.

Applicant.	Show or Examination held at	Date.	Medal.	Winner and Object.
Buckinghamshire County Council Agricultural Committee	Reading ...	March, April & May ...	Silver...	R. H. Keene, as winner of Clean Milk Competition.
Nottinghamshire Education Committee	Newark ...	May 15 ...	Bronze	Miss Bessie Ward, for Buttermaking.
Suffolk Agricultural Association	Ipswich ...	May 31 ...	Bronze	G. R. Blackshaw, as Champion Buttermaker.
Devon County Agricultural Association ...	Bideford ...	May 29-31	Silver...	W. Hunt, for South Devon Cow "Milkmaid 9th," as best Dairy Cow.
Yealtonpton Agricultural Association ...	Yealtonpton ...	June 6 ...	Silver...	Miss A. Sandover, for Butter, as best exhibit of Butter or Cream.
Essex Agricultural Society	Harlow ...	June 12 & 13	Silver...	E. Furness, for British Friesian Cow "Hedges (imp) Froukie 3rd," as best Milk Recorded Dairy Cow or Heifer.
Royal Cornwall Agricultural Association ...	Camborne ...	June 13 & 14	Silver...	Mrs. A. C. Veale, for best exhibit of 2 lbs. Butter.
Staffordshire Agricultural Society	Stafford... ..	June 20 & 21	Silver...	Lt.-Col. R. M. Owen, for Pedigree Shorthorn Cow "Rosette Prim 4th," as best Milk Recorded Dairy Cow.
" " " " " " " " " " " "	" " " " " " " " " " " "	" " " " " " " " " " " "	Bronze	G. Sumner, for best exhibit of Butter.
Sussex County Agricultural Society	Horsham ...	July 18 & 19	Silver...	F. T. Fisher, for Pedigree Shorthorn Cow "Water-crook Princess 2nd," as best Milk Recorded Dairy Cow.
Cambridgeshire and Isle of Ely Agricultural Society	Cambridge ...	July 19 ...	Silver...	The Visitors, Fulbourn Mental Hospital, for Non-Pedigree Cow "Bella," as best Milk Recorded Dairy Cow or Heifer.
Yorkshire Agricultural Society	Sheffield ...	July 25-27	Silver...	Miss S. E. Mudd, as Champion Buttermaker.

AWARDS DURING 1923.—*Continued.*

B. D. F. A. Medal Scheme.

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Applicant.	Show or Examination held at	Date.	Medal.	Winner and Object.
Royal Welsh Agricultural Society	Welshepool ...	July 25-27	Silver...	W. H. Hobson, for best exhibit of Cheese.
Hertfordshire Agricultural Society...	Hatfield ...	July 26 ...	Silver...	S. Blundell, for Lincolnshire Red Shorthorn Cow "Bendish Cherry 2nd," as best Milk Recorded Dairy Shorthorn Cow.
Tring Agricultural Society	Tring ...	August 9 ...	Silver...	G. P. Golden, for Pedigree Shorthorn Heifer "Lady Doreen 4th," as second best Dairy Shorthorn Cow or Heifer.
Middlewich and District Agricultural Society	Middlewich ...	August 22...	Bronze	Mrs. A. Cookson, for best exhibit of Butter.
Penistone Agricultural Society	Penistone ...	August 23...	Bronze	F. Chapman, for Non-Pedigree Shorthorn Cow "Buttercup," as best Milk Recorded Dairy Cow or Heifer.
Yeovil Agricultural Society	Yeovil ...	July to Sept.	Silver...	J. Crumpler, as Winner of Clean Milk Competition.
" " " " " " " " " "	" " " " " " " " " "	Sept. 13 ...	Bronze	W. R. Withers, for Cow "Princess," as best Milk Recorded Dairy Shorthorn Cow or Heifer.
Dorchester Agricultural Society	Dorchester ...	Sept. 14 ...	Silver...	M. N. Tory, for Shorthorn Cow "Raspberry," as best Milk Recorded Dairy Cow.
"Daily Mail" International Federation of Young Farmers' Clubs	Dairy Show, Islington	Oct. 23-26	Silver...	Miss J. Moore, gaining highest score in Cow-Judging Contest.
" " " " " " " " " "	" " " " " " " " " "	" "	Bronze	Miss M. Banbury, gaining second highest score in Cow-Judging Contest.
" " " " " " " " " "	" " " " " " " " " "	" "	Bronze	Miss W. Amery, gaining third highest score in Cow-Judging Contest.
Gloucestershire Root, Fruit, and Grain Society	Gloucester ...	Nov. 9 ...	Silver...	D. Wesson, for best exhibit of Butter.

British Dairy Farmers' Association.

PRIZE ESSAY ON A DAIRYING SUBJECT.

The Council offers a Prize of £10 and the B. D. F. A. Silver Medal for an Essay upon any practical or scientific subject relating to Dairy Farming or Dairying, conditionally upon sufficient merit being shown.

Preference will be given to one based on the original work and experience of the writer. Where the work of others is relied upon, full references must be given, either in footnotes or by numbers (1), (2), &c., with a list of authorities at the end.

The Essay should not exceed 5,000 words, and must be received by the undersigned on 1st December, 1924.

An Essay must be sent in a sealed envelope, bearing a *nom de plume*, and in another sealed small envelope, also bearing the *nom de plume*, the Author must insert his name and address.

The Prize Essay will be the property of the Association. Others will be returned to their respective Authors, but the Association reserve the right to retain Essays on subjects suitable for inclusion in the Annual Journal, which will be paid for at the usual rate for literary contributions.

B. RAVENSCROFT,

Secretary,

28, Russell Square, London, W.C. 1.

British Dairy Farmers' Association.

Suggestions to Farmers as to how best to ensure

THE

CLEANLINESS OF THE MILK SUPPLY.

The attainment of a clean milk supply is largely dependent upon the action of Dairy Farmers themselves.

Every Dairy Farmer is financially interested in this question. Public doubt of the cleanliness of the milk supply means reduced demand for fresh milk. Public confidence means increased use of milk as food and drink—consequently a larger demand.

Any Dairy Farmer by want of reasonable care can jeopardize the reputation of the whole industry and thus destroy the good work of those whose efforts are to increase the consumption of milk.

The co-operation of every producer is confidently requested.

The main points to be emphasized are :—

- (1) That consumers are entitled to receive milk which is clean and wholesome.
- (2) That the precautions necessary to produce clean wholesome milk are easy, simple and inexpensive.

Briefly these precautions are :—

To keep the milk sheds and cows as clean as possible.

To clean the udders and, before milking, wipe them with a clean damp cloth, rinsed after every cow.

To use a partly covered milking pail.

To see that milkers milk with clean hands.

To strain the milk through a strainer fitted with a new disc of cotton wool at each milking.

To empty water from cooler before washing.

To rinse utensils in cold water. Thoroughly wash in hot water and soda and scald in boiling water or, preferably, sterilize with steam or by boiling in water.

To stand utensils upside down to drain after cleaning and NOT to wipe them.

THIS ASSOCIATION APPEALS TO EVERY DAIRY FARMER TO PUT THESE PRECAUTIONS INTO OPERATION, BEING CONVINCED THAT IF PRODUCERS DO NOT TAKE MEANS TO ENSURE A CLEAN WHOLESOME MILK SUPPLY THE DEMAND FOR FRESH MILK WILL SERIOUSLY DIMINISH.

Correspondence on this subject will receive attention at the Offices of the Association, 28, Russell Square, London, W.C. 1.

British Dairy Farmers' Association.

EXAMINATION FOR THE B. D. F. A. DIPLOMA.

The Association grants to any Candidate who satisfactorily passes the necessary Examinations:—

A Diploma and Silver Medal for Proficiency in the Science and Practice of Dairying.

Candidates for the Diploma must have previously obtained the Butter and Cheesemaking Certificates of the Association,* and must produce satisfactory evidence that they have received not less than one year's scientific and practical instruction at some recognised centre for Dairying Instruction, and have spent at least twelve months on a Dairy Farm in addition to the time spent at the Centre.

The Examination will extend over three or more days, and will test (1) the knowledge and experience of the Principles and Practice of Dairying and Dairy Farming, and (2) the skill in making Butter and Cheese, of each Candidate.

Candidates will be required to answer, in writing, sets of questions within a given time, and will also be examined *viva voce*. They will be expected to possess a sound knowledge of all the subjects included in the following Syllabus. Candidates, if required, must produce their note-books of Lectures and Demonstrations attended.

Examinations for Diploma are held in the Autumn upon dates announced in the Agricultural and Dairy Press.

Entries will close 28 days prior to the date fixed for the Examination.

The Entry Fee is 20s.

SYLLABUS.

1. DAIRYING.

- (a) Milk.—The Food Value of Milk; The Yield of Milk from various Breeds; Secretion of Milk and Structure of the Udder; Milking by Hand and Machine; Handling of Milk from Cow to Dairy; Importance of Cleanliness; Production of Highest Grade Milk; Cooling of Milk; Sale of Milk; Influence of Food on the Yield, Flavour, and Fat Contents of Milk; Composition of Milk, Nature and Properties of its Constituents; Differences between Morning and Evening Milk and their Causes; Methods of Sampling and Simple Methods of Testing Milk, as the Lactometer, Creamometer and Centrifugal Fat Testers; Testing for Acidity; Causes of Fermentation; Colostrum, its Nature and Properties; the Keeping of Dairy Records; the Handling of Evening's Milk for Cheesemaking; Properties of Milk suitable for Cheesemaking; Taints in Milk—their Causes, Effects and Remedies; Tests for such Taints; the Ripening of Milk for Cheesemaking; Methods and Reasons for Ripening; use of Natural and "Culture" Starters; Pasteurization of Milk; Chilled Milk: their Subsequent Use for Cheesemaking; Special Testing of Milk, Whey, and Curd requisite in a Cheese Dairy; Utilization of Dairy By-products.
- (b) Cream.—The Various Methods of obtaining Cream; the Construction and Use of the Utensils Employed; Separators, the Construction and Use of the various Types; Composition of Cream, Separated Milk, Skimmed Milk and Butter-milk, with Simple Tests for Fat in same; the Ripening of Cream, Objects and Results; Changes during Ripening; Testing for Acidity; Natural and Artificial Ripening and Preparation of Starters; the Preparation of Cream for Churning; Preparation of Cream for Sale; Clotted Cream.

*Equivalent Certificates of recognised bodies will be accepted by the Association as evidence of sufficient training to justify entry for this Examination.

- (c) **Butter.**—The Various Methods of obtaining Butter, including the Churning of Whole Milk; Utensils required and the Preparation, Use and Care of same; the Process of Butter Manufacture in all its Details; Conditions which affect the Butter Yield; Circumstances affecting the Flavour, Texture, Colour and Keeping Properties of Butter; Dry-salting and Curing of Butter; Faults in Butter and their Causes; Composition and Properties of Good Butter; Composition and Causes of Inferior Butter; Methods of Judging Butter.
- (d) **Cheese.**—Rennet: its Preparation, Properties, and Action upon Milk; Testing its Strength; Storage of Rennet; Substitutes for Rennet; Annatto; a General Knowledge of the Manufacture of the Principal Varieties of Hard-pressed, Blue-veined, and Soft Cheeses, including the use of Wood and Metal Tubs and Jacketed Vats; Methods of Scalding; the Development and Control of Acidity in Curd; Salting and Brining in Cheesemaking; Bandaging; Ripening and Storing of Hard-pressed, Blue-veined and Soft Cheeses; Defects in Cheese and their Causes; Composition of Cheese; Composition and Utilization of Whey; the Manufacture of Whey Butter; the Equipment of a Cheese Dairy and its Cost; the Care of Utensils.

Candidates will be required to make one Hard-pressed Cheese, either Cheddar, Cheshire, or Derby, to be selected by the Examiner, and one Blue-veined Cheese, either Stilton or Wensleydale, to be selected by the Candidate. They must also have a knowledge of the manufacture of other varieties of Hard-pressed Cheese, and of Soft Cheese.

2. DAIRY FARMING.

(a) A General Knowledge of Dairy Farm Management, including the Cultivation of Farm Crops, with a Special Knowledge of those employed in the Feeding of Dairy Stock.

(b) **Foods and Feeding.**—The Effects of various Foods on Milk and Dairy Products; Systems of Feeding and the Compilation of Rations.

(c) **Live Stock.**—Characteristics and Management of Different Breeds of Cattle; their Breeding and Rearing; Choice of Dairy Cattle for Special Purposes and Situations; Identification and Treatment of Common Ailments of Dairy Stock; Pigs and Poultry; Suitable Breeds for Use in Connection with a Dairy Farm and their Management.

(d) **Buildings** suitable for a Dairy Farm: their Situation, Construction, Ventilation, Drainage, &c.; Water Supply.

(e) **Milk Records;** Business Methods involved in Dairying; Book-keeping on a Dairy Farm.

(f) **Improvement in Equipment and Methods on Dairy Farms:** the Use of Score Cards.

3. CHEMISTRY.

(a) **General.**—The Chemical Elements and Constituents found in Milk Soils, Plants, Manures, Animals, and Foods: their Nature and Properties so far as they relate to Agriculture; the simpler Laws of Chemical Combination and Change so far as regards these Substances.

(b) **Dairy.**—The Composition and Properties of Milk, Cream Butter, Cheese, and Dairy Products, and of all Substances used in the Dairy; Simple Methods of Analysis as applied to these Substances; the Chemical Changes which may take place in Milk, Cream, Butter, &c.; Water Supply.

4. BACTERIOLOGY.

(a) General.—Bacteria, their Form, Classification, Growth and Reproduction; The Microscope and its Use; Staining and Microscopic Examination of Bacteria; Methods of Isolation and Cultivation; Preparation of Culture Media; Fermentations and Chemical Changes produced by Bacteria; Enzymes and their Action; Effects of Heat, Cold, Sterilization, Pasteurization, Disinfectants, and Preservatives on Bacteria and Enzymes.

(b) Dairy Bacteriology.—The Bacteria of Milk and Dairy Products; Examination of Milk for Foreign Bodies, Sediment, Blood, Pus, and Pathogenic Organisms; the Bacteriology of Milk, Cream, Butter, and Cheese; Commercial Bacterial Preparations for use in the Dairy; Bacteria Injurious to Dairy Produce: their Source, Nature, and Treatment; Bacterial and other Standards in relation to the Cleanliness of Milk.

(c) Fungi (Moulds) and Yeasts.—Their Forms, Classification, and Growth; their Relation to Dairy Produce.

5. INSTRUCTION.

Capacity to impart Instruction.—Organisation of Dairy Courses suitable to different Districts.

Particulars and Entry Forms may be obtained from

The SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

28, Russell Square, London, W.C. 1.

EXAMINATION FOR CHEESEMAGING CERTIFICATE.

The Association grants to any Candidate who satisfactorily passes the necessary Examination—

A Certificate of Merit for Proficiency in the Theory and Practice of Cheese-making.

The Examination, which will extend over two or more days, will test the Theoretical Knowledge of the Candidates and their Practical Skill in Cheesemaking. Each Competitor will be required to answer, in writing, a set of questions within a given time, and will also be examined *viva voce*. On the same or following day a Practical Examination in Cheesemaking will take place.

Candidates for this Certificate must, at the time of entry, produce satisfactory evidence that they have received at least twelve months' instruction in the Theory and Practice of Cheesemaking, of which at least six months must have been spent at a recognised centre for dairy instruction. They must possess a sound knowledge of the subjects included in the following Syllabus.

Candidates will be required to make one Hard-pressed Cheese, either Cheddar, Cheshire or Derby, to be selected by the Examiner, and one Blue-veined Cheese, either Stilton or Wensleydale, to be selected by the Candidate. They must also have a knowledge of the manufacture of other varieties of Hard-pressed Cheese and of Soft Cheese.

Candidates are at liberty to bring their own utensils for the Practical Examination if they wish to do so.

Examinations for Cheesemaking Certificates are held twice a year, viz., in the Spring and Autumn, upon dates announced in the Agricultural and Dairy Press.

Entries will close 28 days prior to the date fixed for the Examination.

The Entry Fee is 10s.

SYLLABUS.

1. Milk.—The Food Value of Milk; The Yield of Milk from various Breeds; Secretion of Milk and Structure of the Udder; Milking by Hand and Machine; Handling of Milk from Cow to Dairy; Importance of Cleanliness; Production of Highest Grade Milk; Cooling of Milk; Sale of Milk; Influence of Food on the Yield, Flavour and Fat Contents of Milk; Composition of Milk, Nature and Properties of its Constituents; Differences between Morning and Evening Milk and their Causes; Methods of Sampling and Simple Methods of Testing Milk, as the Lactometer, Creamometer, and Centrifugal Fat Testers; Testing for Acidity; Causes of Fermentation; Colostrum, its nature and properties; the Keeping of Dairy Records; the Handling of Evening's Milk for Cheesemaking; Properties of Milk suitable for Cheesemaking; Taints in Milk, their Causes, Effects and Remedies; Tests for such Taints; the Ripening of Milk for Cheesemaking; Methods and Reasons for Ripening; use of Natural and "Culture" Starters; Pasteurization of Milk; Chilled Milk; their Subsequent use for Cheesemaking; Special Testing of Milk, Whey, and Curd requisite in a Cheese Dairy; Utilization of Dairy By-products.

2. Cheese.—Rennet: its Preparation, Properties, and Action upon Milk; Testing its Strength; Storage of Rennet; Substitutes for Rennet; Annatto; a General Knowledge of the Manufacture of the Principal Varieties of Hard-pressed, Blue-veined, and Soft Cheeses, including the use of wood and metal tubs and jacketed vats; Methods of Scalding; the Development and Control of Acidity in Curd; Salting and Brining in Cheesemaking; Bandaging; Ripening and Storing of Hard-pressed, Blue-veined and Soft Cheeses; Defects in Cheese and their causes; Composition of Cheese; Composition and Utilization of Whey; the Manufacture of Whey Butter; the Equipment of a Cheese Dairy and its Cost; the care of Utensils; the Detailed Principles and Practice requisite for the Manufacture of one of the following types of Cheese:—

- (a) A Hard-pressed British Cheese (not less than 25 lbs. weight).
(b) A Blue-veined British Cheese (not less than 10 lbs. weight).
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Particulars and Entry Forms may be obtained from

The SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

28, Russell Square, London, W.C. 1.

EXAMINATION FOR BUTTERMAKING CERTIFICATE.

The Association grants to any Candidate who satisfactorily passes the necessary Examination—

A Certificate of Merit for Proficiency in the Theory and Practice of Butter-making.

The Examination, which will extend over two or more days, will test the Theoretical Knowledge of the Candidates and their Practical Skill in Buttermaking. Each Competitor will be required to answer, in writing, a set of questions within a given time, and will also be examined *viva voce*. On the same or following day a Practical Examination in Buttermaking will take place.

Candidates for this Certificate must, at the time of entry, produce satisfactory evidence that they have received at least three months' instruction (not necessarily at a Dairy School) in the Theory and Practice of Buttermaking. They must possess a sound knowledge of the subjects included in the following Syllabus. They will be required to make Butter.

Candidates are at liberty to bring their own utensils for the Practical Examination if they wish to do so.

Examinations for Buttermaking Certificates are held twice a year, viz., in the Spring and Autumn, upon dates announced in the Agricultural and Dairy Press.

Entries will close 28 days prior to the date fixed for the Examination.

The Entry Fee is 5s.

SYLLABUS.

1. Milk.—The Food Value of Milk; the Yield of Milk from various Breeds; Secretion of Milk and Structure of the Udder; Milking by Hand and Machine; Handling of Milk from cow to dairy; Importance of Cleanliness; Production of Highest Grade Milk; Cooling of Milk; Sale of Milk; Influence of Foods on the Yield, Flavour and Fat Contents of Milk; Composition of Milk, Nature and Properties of its constituents; Differences between Morning and Evening Milk and their causes; Methods of Sampling and Simple Methods of Testing Milk, as the Lactometer, Creamometer, and Centrifugal Fat Testers; Testing for Acidity; Causes of Fermentation; Colostrum, its nature and properties; the Keeping of Dairy Records.
2. Cream.—The Various Methods of Obtaining Cream; the Construction and Use of the Utensils employed; Separators, the Construction and Use of the various Types; Composition of Cream, Separated Milk, Skimmed Milk, and Butter-milk, with Simple Tests for Fat in same; the Ripening of Cream—Objects and Results; Changes during Ripening; Testing for Acidity; Natural and Artificial Ripening and Preparation of Starters; the Preparation of Cream for Churning; Preparation of Cream for Sale; Clotted Cream.
3. Butter.—The Various Methods of Obtaining Butter, including the Churning of Whole Milk; Utensils required, and the Preparation, Use, and Care of same; the Process of Butter Manufacture in all its details; Conditions which affect the Butter Yield; Circumstances affecting the Flavour, Texture, Colour, and Keeping Properties of Butter; Dry-salting and Curing of Butter; Faults in Butter and their causes; Composition and Properties of Good Butter; Composition and Causes of Inferior Butter; Methods of Judging Butter.

Particulars and Entry Forms may be obtained from

THE SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

28, Russell Square, London, W.C. 1.

EXAMINATION FOR FACTORY MANAGER'S DIPLOMA.

Regulations and Syllabus, viz. :—

Candidates must hold the British Dairy Farmers' Association's Diploma or the National Dairy Diploma.

They must have subsequently spent at least six summer months in a Factory dealing with not less than 500 gallons of milk daily.

Candidates will write answers to a paper and be examined orally and practically on the following :—

1. Factory : the Site, Construction, and Requirements of a Factory.
2. Lighting and Power in the Factory.
3. Boilers, Engines, Shafting, Fittings, and Apparatus, their disposition and control.
4. Maintenance and Cleansing of Factory and disposal of Waste.
5. Organisation of Labour and use of Labour-saving Devices.
6. Milk, management of, on arriving at Factory : Weighing, Sampling, Testing, Recording, Cleaning, &c.
7. Methods of dealing with the Milk for (a) Sale ; (b) Cream Production ; (c) Buttermaking ; (d) Cheesemaking ; (e) Other Products.
8. Refrigerating Machinery and its use.
9. Cold Stores and their Management.
10. Pasteurizing and Sterilizing Machinery and its use.
11. Cream, preparation of, for Market.
12. Butter : Manufacture and Treatment.
13. Cheese : Manufacture and Treatment.
14. Utilization of Bye-products.
15. Pig-keeping.
16. Business Management ; Book-keeping ; Stocktaking and Depreciation ; Contracts ; Railway Rates and Conditions ; Statements ; Notices, &c.
17. Law, so far as it affects the Factory, the Management, and the Produce, including main provisions of Factory and Workshop Act ; Workmen's Compensation ; Health Insurance ; Employers' Liability ; Rivers Pollution Act ; Industrial and Provident Societies Act ; Sale of Food and Drugs Act ; Milk and Dairies Acts, and other Legislation as it affects the Working of Factories and the Manufacture and Sale of Dairy Produce.

The Entry Fee for each Candidate is fixed at £4 4s.

Particulars and Entry Forms may be obtained from

THE SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

23, Russell Square, London, W.C. 1.

EXAMINATIONS

AT

LOCAL CENTRES.

In order to meet the convenience of Students at Dairy Schools, members of local Societies, and other persons, the Association will conduct Examinations for its Diplomas and Certificates at any place in the United Kingdom upon receiving satisfactory proof that the following conditions will be observed :—

That the School, Society, County Council, or other body requesting such an Examination to be held, undertake :—

- (1) To supply all necessary appliances and materials.
 - (2) To pay the fees and expenses of the Examiners.
 - (3) To supply the milk required free from preservatives and fit for Cheesemaking.
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Copies of Question Papers set at recent Examinations may be obtained at 3d. per copy.

Applicants are requested to state whether Diploma, Cheese, or Butter Questions are required.

Further particulars and Entry Forms for Students may be obtained from

The SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

28, Russell Square, London, W.C. 1.

EXAMINATION RESULTS, 1923.

EXAMINATION FOR BUTTERMAKING AND CHEESEMAKING CERTIFICATES AT THE BRITISH DAIRY INSTITUTE, READING; ON MONDAY, TUESDAY, WEDNESDAY AND THURSDAY, JUNE 18TH, 19TH, 20TH AND 21ST.

A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Miss Agnes D. Ainslie, Miss Mary E. Alderson, Miss Olive M. Barnard, Laurence H. Beard, Miss Millicent N. Blackman, Miss Ruth M. Brinkler, Ed a Capstick, Miss Dorothy J. Coleman, Miss Winifred Cox, Miss Susie Cro Dorothy Crowther-Smith, Miss Helen Davis, Miss Phyllis J. Dow, Br Fricker, Miss Muriel E. Gascoigne, Paul W. B. Gates, John G. Gillett, Mr. Alice Gosling, Samuel W. Green, Miss Marjorie Hamilton, Miss Gladys E. Healy, Miss Audrey T. Jacobs, Harold L. Jacobsen, Miss Eileen W. Mac Ilwaine, Miss Marguerite O. Marshall, Miss Dorothea I. M. Mayes, Miss Eleanor F. McIntosh, Miss Elizabeth B. McTurk, Miss Sylvia Nepean, Frederick W. Pavey, Christopher F. Porteous, Albert W. Punter, Eric Rea, Cyril L. Robinson, Miss Lucy M. Simpson, John C. W. Sims, Rutherford W. C. Smith, Miss Rhoda R. Stewart, Miss Averil Stirling, Miss Gertrude A. Velten, John F. McLaren Wanhill, Miss Gladys M. Woods and Miss Sarah Yofé.

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Miss Millicent N. Blackman, Edward Capstick, Miss Winifred M. Cook, Miss Aileen M. Davidson, Miss Mary W. Earle, Brian J. Fricker, Miss Margaret Griffiths, Miss Marjorie Hamilton, Miss Audrey T. Jacobs, Harold L. Jacobsen, Miss Margaret F. Nowell, Christopher F. Porteous, Albert W. Punter, Eric Rea, Miss Janet R. L. Rennie, Miss Gladys M. Rowling, Miss Lucy M. Simpson, John C. Sims, Miss Muriel R. Turner and John F. McLaren Wanhill.

EXAMINATION FOR BUTTERMAKING AND CHEESEMAKING CERTIFICATES AT THE DAIRY DEPARTMENT, COUNTY LABORATORIES, CHELMSFORD; ON MONDAY, TUESDAY AND WEDNESDAY, JULY 23RD, 24TH AND 25TH.

A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Alfred J. Carter, Jerman Chirgwin, Miss May E. Clarke, Bernard H. Hunt, Miss Vera H. Landquist, Colin Lindsay, George A. M. Reed, Miss Christina Salmon, Miss Ethel M. Shelley and Reginald A. L. Walls.

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Alfred J. Carter, Jerman Chirgwin, Bernard H. Hunt, Colin Lindsay, George A. M. Reed, Miss Christina Salmon and Reginald A. L. Walls.

EXAMINATION FOR BUTTERMAKING AND CHEESEMAKING CERTIFICATES AT THE CANNINGTON COURT FARM INSTITUTE, BRIDGWATER; ON MONDAY, TUESDAY AND WEDNESDAY, JULY 23RD, 24TH AND 25TH.

A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Miss Nancy L. Biddle, Miss Constance C. Candy, Miss Hilda J. Day, Miss Lilian Dunne, Miss Fanny E. Forrow, Miss Mildred J. Fowler, Miss Winifred K. Fuller, Miss Mary Keedwell, Miss Eva R. Minett and Miss Alice J. Snook.

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Miss Hilda J. Day, Miss Lilian Dunne, Miss Fanny E. Forrow, Miss Winifred K. Fuller, Miss Mary Keedwell and Miss Eva R. Minett.

EXAMINATION FOR DIPLOMA, BUTTERMILKING AND CHEESEMAKING
CERTIFICATES AT THE BRITISH DAIRY INSTITUTE, READING;
ON MONDAY, TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER
17TH, 18TH, 19TH AND 20TH.

- A Diploma, with Honours, and Silver Medal for Proficiency in the Science and Practice of Dairying to Edward Capstick, Brian J. Fricker, Miss Gwen Glynn-Jones and Albert W. Punter.
- A Diploma and Silver Medal for Proficiency in the Science and Practice of Dairying to Miss Mabel B. Archer, George R. Blackshaw, Miss Aileen M. Davidson, Miss Alice Davies, Miss Annie Davies, Miss Mary Fielding, Alan V. B. Foster, Robert J. Hinton, Miss Mabel Metcalfe, Christopher F. Porteous, Eric Rea, John C. W. Simms, Bernard E. Swain, Miss Rhona M. Tabor, Miss Ina M. B. Vincent, Miss Bessie Wall, John F. McLaren Wanhill, Charles R. M. Webb and Miss Eileen G. Woodcock.
- A Certificate of Merit for Proficiency in the Theory and Practice of Buttermilking to William E. Cole, Miss Florence M. Dingle, Miss Vera C. Hart, Miss Mary M. Knowles, John G. Mayo, Miss Ada Roberts, Miss Mary A. Shakespeare and John C. Way.
- A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Miss Agnes D. Ainslie, Laurence H. Beard, William E. Cole, Miss Winifred Cox, Miss Dorothy Crowther-Smith, Miss Helen Davis, Miss Florence M. Dingle, John G. Gillett, Mrs. Alice Gosling, Samuel W. Green, Miss Vera C. Hart, Miss Eileen W. MacIlwaine, Miss Marguerite O. Marshall, John G. Mayo, Miss Elizabeth B. McTurk, Miss Sylvia Nepean, Frederick W. Pavay, Miss Ada Roberts, Cyril L. Robinson, Miss Mary A. Shakespeare, Miss Gertrude A. Velten, John C. Way and Miss Sarah Yofé.

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY, AND THURSDAY, JUNE 18TH,
19TH, 20TH, AND 21ST, 1923.

EXAMINER :

R. H. EVANS, B.Sc.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. Define the terms (a) Specific Gravity (b) Acidity (c) Centrifugal (d) Fermentation (e) Percentage of Fat.
2. From which do you get the better flavoured butter, separated cream or from cream allowed to ripen on the surface of the milk? Give reasons for your answer.
3. What causes milk to turn sour, and how may this change be delayed?
4. How much butter would you expect to obtain from 100 gallons of milk, containing 3.5% fat?
5. Describe what you consider to be "good" grain in butter. Explain why sometimes a bad fracture is obtained in a sample of butter made from good grain?
6. What percentage of fat would you expect to find in a sample of well separated milk? When the amount of fat present is in excess of the figure you give, to what causes may this be due?
7. Explain the process of washing butter grains in the churn, and what is the object in doing so?
8. What are the chief causes of "inferior butter"?
9. Why is a good supply of pure water essential for a butter dairy?
10. What are the "solids other than fat" found in milk? Give the percentage you would expect to find in an average sample.

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY, AND THURSDAY, JUNE 18TH,
19TH, 20TH, AND 21ST, 1923.

EXAMINER :

MISS M. M. MACQUEEN.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. Describe the precautions which should be taken in producing milk to ensure a clean and well flavoured product.
2. Do various soils affect cheesemaking, and, if so, in what way?
3. What material do you consider the most effective for straining milk? Give reasons.
4. How would you select commercial rennet for cheesemaking and what substitutes may be used for it?
5. Why is the development of acidity essential and what percentages do you prefer at different stages in the making of
 - (a) Cheddar cheese;
 - (b) Either Stilton or Wensleydale cheese?
6. If a quantity of stale or badly flavoured milk was delivered, how would you vary the usual treatment in making Cheddar cheese?
7. To what extent can the quality of a pressed cheese be affected when in the cheese press?
8. What are the changes which take place in the ripening of a blue-veined cheese, and how would you control the ripening to get the best results?
9. What are the various ways in which whey may be dealt with from a large cheese factory (apart from pig-feeding)? Which do you consider the most profitable?
10. Given 100 gallons of milk containing 3.5% of butterfat, how much cheese would you expect to obtain from
 - (a) Cheddar cheese;
 - (b) Stilton cheese?

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT
THE DAIRY DEPARTMENT, COUNTY LABORATORIES,
CHELMSFORD; ON MONDAY, TUESDAY, AND WED-
NESDAY, JULY 23RD, 24TH, AND 25TH, 1923.

EXAMINER: THOMAS LIMOND.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *visu voce*.

QUESTIONS.

1. Give the composition of an average sample of cow's milk? Describe any conditions you know which influence the percentage of fat in milk.
2. What is "Grade A" milk? How may it be produced on an ordinary dairy farm?
3. Describe the process of testing milk for butter fat by means of a Gerber machine. What precautions are necessary if accurate results are to be obtained?
4. Describe a method of making Devonshire Cream. How much cream would you expect to get from ten gallons of milk of average quality?
5. Explain how you would propagate a "starter" from day to day. What degree of acidity should it have when ready for use?
6. Describe briefly the method you would adopt in making butter, to be retailed locally, and what appliances you would require to deal with the milk of ten cows.
7. What precautions would you take in order to obtain the desired flavour in butter?
8. What is the legal standard for water in butter? Name any conditions you know which might cause a high percentage of water in butter.
9. What are the characteristics of good salt for buttermaking? How much salt would you use for (a) salted butter (b) butter for immediate use?
10. Enumerate the causes of bad flavours, greasy texture, and pale colour in butter.

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT
THE DAIRY DEPARTMENT, COUNTY LABORATORIES,
CHELMSFORD; ON MONDAY, TUESDAY, AND WED-
NESDAY, JULY 23RD, 24TH, AND 25TH, 1923.

EXAMINER: THOMAS LIMOND.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. What would you consider a fair average yield from a herd of Shorthorn cows? What conditions would have an influence on the yield of the cows individually?
2. If you were responsible for a herd of forty cows, explain what precautions you would take in order to ensure that the milk would be suitable for making the best quality of cheese.
3. Explain how you would ripen milk for cheesemaking, and state the objects of ripening the milk.
4. In the event of the evening's milk being slightly sour in the morning, explain how you would proceed to make it into Cheddar cheese.
5. Describe the principal differences in the making of Cheddar and Cheshire cheese, and in the finished product.
6. What happens while cheese are ripening? At what ages would you expect the following varieties of cheese to be in best condition for selling:—
 - (a) Cheddar?
 - (b) Derby?
 - (c) Stilton?
7. How would you vary the process of making Cheddar cheese (a) to be sold when three weeks old, and (b) to be sold when six months old?
8. In the making of Stilton cheese what would be the effects of the following:—
 - (a) Too little acid at time of adding rennet?
 - (b) Too much acid when curd is put into moulds?
 - (c) Draining the curd in a cold room?
 - (d) Ripening the cheese at too high a temperature?
9. Give the average composition of whey, and state how it can best be utilized on a Dairy Farm.
10. What is rennet? Describe any conditions you know that affect its action upon milk.

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT
CANNINGTON COURT FARM INSTITUTE, BRIDGWATER,
MONDAY, TUESDAY, AND WEDNESDAY, JULY 23RD, 24TH,
AND 25TH, 1923.

EXAMINER :

W. J. GRANT.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

(Ten questions only to be answered.)

1. Name the sources of water supply for a dairy farm which must be carefully examined. Give reasons for care in selecting same.
2. What is meant by "air space" in cow houses? Draw a section of a cow house showing your most approved plan of ventilation.
3. Describe any two methods for removing cream from the milk. Explain the influence of temperature, and describe the results.
4. Describe the best system of ripening whole milk for buttermaking. State the advantages and disadvantages of making butter from ripened whole milk, as compared with any other system.
5. A farmer milk seller has been convicted of selling milk deficient in fat according to legal standard—he has not adulterated the milk nor by any means caused the deficiency. Suggest what may have been the cause of the deficiency of fat in the milk. Can you describe a simple method by which the milk seller may honestly guard against future successful prosecutions?
6. What method of feeding calves would you recommend upon a butter-making farm? What are the objections raised against the sole use of separated milk in calf rearing?
7. Give some information as to points and character that you would look for in a first class dairy cow.
8. Of the root crops grown upon the farm state which you consider most suitable for cows in milk during winter and how may food taints in milk be guarded against.
9. What are the causes of variation in the composition of cow's milk?
10. Mention some of the most common difficulties met with by the butter-maker, and shortly describe one.
11. What are the characteristics of a good dairy?
12. What is churning?

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT
CANNINGTON COURT FARM INSTITUTE, BRIDGWATER,
MONDAY, TUESDAY, AND WEDNESDAY, JULY 23RD, 24TH,
AND 25TH, 1923.

EXAMINER:
MISS M. KNOWLES.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *visa voce*.

QUESTIONS.

(Ten questions only to be answered.)

1. Give a short description of the influence of each constituent of milk during the process of cheesemaking. What parts are retained in the cheese, and why?
2. Describe fully the making of a Cheshire, Cheddar or Leicester (one variety).
3. In what way would you alter your method to produce a quick, or a slow ripening cheese?
4. At what season of the year is it most difficult to produce fine cheese? How do you account for this?
5. Discuss the advantages and disadvantages of using "starters" in various makes of cheese. In the making of what class of cheese are starters most essential?
6. How would you prepare a "starter" and propagate it afterwards: how often is it advisable to have a new culture?
7. Compose the testing of milk for ripeness by the "acidimetre" and "Rennet test" respectively. State what advantages, if any, one method possesses over the other.
8. What are the chief sources of taints in milk, and how may they be combated during the process of cheesemaking?
9. What is the effect of "salt" on the curd? Give the proper quantity to use in a Cheddar, Cheshire, and Stilton cheese. What would happen if you used either too much or too little?
10. What is the object of pressing cheese? What weight should be applied to a Cheddar or Cheshire cheese? If the Cheddar cheese was left unpressed over night, what would be the result?
11. Give some account of the treatment of cheese during ripening, and the process. What temperature is best? If kept at a higher or lower temperature, what effect would it have on the cheese?
12. In choosing utensils for cheesemaking or dairying, what points would you specially observe?

EXAMINATION FOR DIPLOMA AT THE BRITISH DAIRY INSTITUTE, READING; ON MONDAY, TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER 17TH, 18TH, 19TH AND 20TH, 1923.

EXAMINER:

T. J. DRAKELEY, Ph.D., F.I.C., F.C.S.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

CHEMISTRY.

1. How would you determine whether a sample of soil contained calcium carbonate? Of what importance is calcium carbonate in crop production?
2. Explain what takes place when milk is curdled by means of (a) rennet, (b) acetic acid. In what respect does the natural souring of milk differ from the two cases mentioned?
3. How would you estimate rapidly the percentage of total solids, and of fat in a sample of milk? Explain the use of the values in the detection of serious adulteration with water.
4. Write a short essay on *one* of the following subjects:—(a) green manuring, (b) phosphates, (c) milk powders, (d) availability.

BACTERIOLOGY.

5. Write an account of the manufacture of any cheese you have made, mentioning the importance of bacteria and moulds in the ripening process.
6. What is the bacteriological standard for a "certified milk"? How would you determine whether a sample satisfied the necessary conditions?
7. Explain the process of pasteurisation with special regard to its application to milk.
8. What is meant by the term, "anaerobic organism"? Mention those anaerobic organisms which are of importance in dairying.

EXAMINATION FOR DIPLOMA AT THE BRITISH DAIRY
INSTITUTE, READING; ON MONDAY, TUESDAY,
WEDNESDAY AND THURSDAY, SEPTEMBER 17TH, 18TH,
19TH AND 20TH, 1923.

EXAMINERS: T. J. DRAKELEY, PH.D., F.I.C., F.C.S., and
R. H. EVANS, B.Sc.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

DAIRYFARMING QUESTIONS.

1. Enumerate the chief points of difference between a Michaelmas and a Ladyday tenant right valuation.
2. What is meant by a "Record of the Holding"? Mention the advantages to both landlord and tenant of having such a record drawn out.
3. Describe in detail the cultivation of a crop of Spring Oats, giving an estimate of the cost, and of the value of the crop when harvested.
4. Give an account of an economic method of rearing calves for real, showing an estimate of the cost and probable return.
5. Mention any two methods of estimating the comparative value of foods, illustrating your answers by examples.
6. What are the causes and best methods of dealing with (a) White Scour in calves; (b) Mammitis.
7. Write brief notes on the construction, size, etc., of the following in an up-to-date cowshed:
 - (a) Cowstalls;
 - (b) Mangers;
 - (c) Dung Channels;
 - (d) Gangways.
8. Briefly describe the origin and development of the modern dairy Shorthorn.
9. Mention the more important points you would take into consideration in judging eggs.

EXAMINATION FOR DIPLOMA AT THE BRITISH DAIRY INSTITUTE, READING; ON MONDAY, TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER 17TH, 18TH, 19TH AND 20TH, 1923.

EXAMINERS: T. J. DRAKELEY, Ph.D., F.I.C., F.C.S.,
R. H. EVANS, B.Sc., and MISS M. M. MACQUEEN.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

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Candidates will subsequently be examined *viva voce*.

DAIRYING QUESTIONS.

1. In pursuance of an Order, dated May 25th, 1923, known as "The Milk (Special Designations) Order," milk may be sold or offered or exposed for sale, under the following special designations: "Certified," "Grade A (Tuberculin Tested)," "Grade A," and "Pasteurised." Explain these terms.
2. Briefly describe the effect of heat on the chemical and physical characters of milk.
3. Enumerate the chief points of difference between "Flash," Pasteurisers, Retarders, and "Holder" Pasteurisers.
4. Discuss the question of "colour" in dairy products, and mention the more important things which cause the same to vary.
5. Describe how you would feed milking cows on the soiling system. To what extent would each different food affect hard-pressed cheese made from such milk?
6. State what manures you would prefer to use on a cheesemaking farm and why? What would be the probable effect on the cheese if excessive amounts of any of these were used?
7. What equipment would be required for a dairy converting 500 gallons of milk per day into hard pressed cheese? What would be the approximate cost of the equipment? Make a suitable plan of the rooms shewing how you would place the necessary equipment.
8. Describe the various books you would keep for a dairy of above size if the milk were produced on the farm.
9. Give the scale of points you would use in judging a class of blue veined cheese, either Stilton or Wensleydale, and give reasons for the various points in the scale.

EXAMINATION FOR BUTTERMAKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER
17TH, 18TH, 19TH, AND 20TH, 1923.

EXAMINERS :

T. J. DRAKELEY, PH.D., F.I.C., F.C.S., and R. H. EVANS, B.Sc.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. How much milk and how much butter would you expect an ordinary Jersey, and an ordinary Shorthorn to yield in a year?
2. Describe the effect of (a) heating; (b) cooling, on milk.
3. What foods in particular affect the flavour of milk?
4. Why is "factory" butter generally more reliable than ordinary "farm" butter?
5. Enumerate the difficulties often experienced in the management of milk, cream, and butter in badly constructed dairies.
6. Briefly describe the structure of the udder.
7. Draw a scale of points you would adopt in judging butter.
8. Write an account of (a) any one method of finding the Specific Gravity of Milk; (b) a method of finding the percentage of water in butter.
9. What are (a) the minimum legal percentage of fat in milk;
(b) the minimum legal percentage of solids not fat in milk;
(c) maximum amount of water allowed in butter;
(d) Specific gravity of Sulphuric Acid used in carrying out a Gerber test for fat in milk;
(e) maximum amount of Boric Acid allowed in cream?
10. Define the following terms:—
Colostrum; density; ferment; bacterium; spore and albuminoid.

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER
17TH, 18TH, 19TH, AND 20TH, 1923.

EXAMINERS :

T. J. DRAKELEY, PH.D., F.I.C., F.C.S., and MISS M. M. MACQUEEN.

Three hours are allowed for this paper.

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Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. What stipulations would you make when purchasing milk for cheesemaking? Give your reasons.
2. What points would you observe when buying milk churns for a cheese factory where the milk has to travel by rail?
3. Describe how you would sample and test milk when purchasing for a cheese factory.
4. What advantages are there in the use of a "Starter" for cheesemaking? Describe how you would make one.
5. Give the percentages of acidity you prefer at the different stages in making
 - (a) Cheddar Cheese;
 - (b) Cheshire Cheese;
 - (c) Derby Cheese.
6. What effect has temperature on cheesemaking? Give the temperatures you prefer at the different stages in making
 - (a) Cheddar Cheese;
 - (b) Wensleydale Cheese.
7. What are the results of oversalting or undersalting on a hard-pressed cheese?
8. Describe the method you would use in making whey butter. How does whey butter usually compare with ordinary cream butter?
9. Which soft cheese do you consider the most profitable? What return would you expect from 20 gallons of average quality milk when made into this cheese?
10. From what material do you prefer cheese moulds to be made? Compare the use of tin and wood. What gauge would you use in tin?

The British Dairy Farmers' Association.

PATRON.—HIS MAJESTY THE KING.

PRESIDENT, 1924.—Major J. A. MORRISON, D.S.O.,
Basildon Park, Reading.

VICE-PRESIDENTS.

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 Cook, Miss E. G., Heath House, Tetsworth, Oxon
 Cook, William, & Sons (represented by A. J. Thompson), Orpington House, St. Mary Cray, Kent
 Cook, William H., The Model Poultry Farm, Orpington, Kent
 Cooke, Miss W. M., Eversley Park, Sherburn-in-Elmet, Yorks
 Cooper, Major R. W., Rush Court, Wallingford, Berks
 Cooper, Sir George A., Bart., Hursley Park, Winchester (Agent, T. W. Ashton, Estate Office, Hursley Park, Winchester, Hants)
 Coote, Col. Charles H. Eyre, Highgate House, Creaton, Northampton
 Copley, S. W., Deacons Hill, Elstree, Hertfordshire
 Corbett, Hon. Godfrey, M.C., Rowallan, Kilmarnock (L.M.)
 Corner, Dr. Harry, Brook House, Southgate, N. 14
 Cornish, Mrs. C. J., Steyne, Bembridge, Isle of Wight
 Corrie, Harold, Heath House Farm, Lowfield Heath, Surrey
 Cory, Percy W., Manor Farm, Notgrove, near Bourton-on-the-Water, Glos
 Cory, Sir Clifford J., Bart., Llantarnam Abbey, Monmouthshire
 Coryton, Miss Mary L., Fursdown, Plympton, Devon
 Coster, J., & Sons (represented by J. Coster), Gouda, Holland
 Cotterell, R. L., Ruscombe, Twyford, Berks
 County Live Stock Insurance Association, Ltd. (represented by John Hetherton), The County Stud Farm, Sandburn, Stockton-on-the-Forest, Yorks
 Cowell, Miss Mary A., Calbaws Hill, Ledbury, Herefordshire
 Cowley, William A., Ovingdean Grange, near Brighton, Sussex
 Cox & Sons (represented by A. Cockx), Northwold Buildings, Northwold Road, Stoke Newington, London, N. 16
 Cox, Harry T., Bishops Stortford Dairy Farms, Bishops Stortford, Herts
 Cox, James, jun., Manor Road Farm Dairy, Barnet, Herts
 Cox, Miss E. Lillian, Chewton Field Farm, Chewton Mendip, Bath, Somerset
 Cox, Miss Vera, Powean, Dunloe, Cornwall
 Cox, William J., The Cardiff Milk Supply, City Road, Cardiff, Glam
 Crabtree, James, 25-39, Price Street, Birkenhead, Cheshire (L.M.)
 Cracknell, John G., Lowcop, Bridston, Ross, Herefordshire
 Craufurd, Mrs. E. L. H., Dunlop Place, Dunlop, Ayrshire
 Crawford, Hugh W. B., Chapmantown, Castle Douglas
 Crawford, John, Lawness Farm, Billericay, Essex
 Crawford, Lady Gertrude, Coxhill, Lymington, Hants (L.M.)
 Crawford, Miss A. W., Harper Adams Agricultural College, Newport, Salop
 Crewe, Marquis of, P.C., D.C.L., Crewe House, Curzon Street, W. (Communications to Prof. W. McCracken, Englesea House, Crewe)
 Crompton, Chas. W., Hall Green, near Wakefield, Yorks
 Crompton, James R., Greenhayes, Banstead, Surrey
 Cross, George, British Empire Hotel, De Vere Gardens, Kensington, London, W. 8
 Cross, J. L., Catthorpe, Rugby
 Crow, Robert, Jealots Hill Farm, Bracknell, Berks
 Crowe, John, Woodhouse, Aldford, Chester
 Croxon, A. B., The Limes, Burnham-on-Crouch, Essex
 Crumpler, Jesse, Longlands, North Coker, Yeovil
 Cunningham, Mrs., 1156, Argyle Street, Glasgow
 Cupiss, Francis, Ltd. (represented by Walter Clarke), The Wilderness, Diss, Norfolk
 Currie, Laurence, Minley Manor, Farnborough, Hants
 Curtis, Mrs. C. J., 43, West Hill Avenue, Epsom

- DAIRY OUTFIT CO., Ltd. (represented by Sir Sidney J. Pocock, J.P.), 251, Pentonville Road, King's Cross, London, N. 1
 Dale, William, Mill Hill Farm, Acklam, Middlesbrough, Yorks
 Dalrymple, Miss Mary, Elliston, St. Boswells
 Dalrymple-Hamilton, Col. N., Bargany, Girvan, Ayrshire (L.M.)
 Darrell, Miss Mary, Ebberston, Snainton, S.O., Yorkshire
 Dartmouth, Earl of, P.C., K.C.B., Patshull, Wolverhampton
 Davies, Edward, Plas Power Home Farm, Wrexham

- Davies, General H. F., Elmley Castle, Pershore (L.M.)
 Davies, Ben, 28, King Street, London, W. 1
 Davies, Miss Alice, Vicarage Lane, Rhuddlan, North Wales
 Davis, Colonel, Salt Hill House, Slough, Bucks
 Davis, Mrs. H., 75, George Street, Oxford
 Davy, A. Cedric, Paternoster Row, Sheffield, Yorks
 Dawson, George, Dawson Bros., Leeds, Yorks
 Dawson, Miss E. M., 1, College Hill, Shrewsbury
 Day, Chas. F. (representing Day & Day), 237-239, Lower Clapton Road, Clapton, London, E. 5
 Day, Charles T., 237-239, Lower Clapton Road, Clapton, London, E. 5
 Day, Major E. C., Becketts, Chiddingstone, Kent
 Day, Son, & Hewitt (represented by G. S. Hewitt), 22, Dorset Street, London, W. 1 (L.M.)
 Dean, F. W., St. Germain's Farm, St. Albans, Herts
 Dearden, Miss D. V., British Dairy Institute, Reading
 De Bathe, Lt.-Col. Max, c/o Lloyds Bank Ltd., 6, Pall Mall, London, S.W. 1
 Debenham, Miss Alice (representing Messrs. E. R. & A. Debenham), Bladen Dairy Farms, Briants Puddle, Dorchester
 DeLasaux, C. R., 24, West Hill, Sydenham, London, S.E. 26
 Denchfield, F. T., Manor House, Tingwick, Buckingham
 Dennis, Mrs. Cyril, Oakley Hall, Market Drayton, Salop
 Derby, Earl of, K.G., Knowsley, Prescott, Lancs (all communications to Robert Galbraith, The Home Farms, Knowsley, Prescott)
 Derbyshire Farmers, Limited (represented by W. Woodall), 19, Corn Market, Derby
 Desborough, Lord, K.C.V.O., Taplow Court, Taplow, Bucks
 Deverell, Edgar T., Dormers Leys, Tetsworth, Oxon
 Dewar, Lord, The Homestall, East Grinstead, Sussex
 Dewe, W., Ashampstead, near Reading
 Dickie, Robert, Knockenjig, Sanguhar, Dumfriesshire
 Dickinson, B. O., Pharos, Burnham-on-Sea, Somerset
 Dickson & Robinson (represented by F. Robinson), Cathedral Street, Manchester, Lancs
 Dickson, Miss K., Sutton Place Cottage, Abinger, Surrey
 Dimmock, J. B., Shotford Hall, Harleston, Norfolk
 Dixon, T. & M., Ltd. (represented by R. Dixon), Tardebigge, Bromsgrove, Worcester
 Done, John, Manor House, Malpas, Cheshire
 Doughty, Wilfrid, V., J.P., Ickleford Manor, Hitchin, Herts
 Douglas, John, Douglas Wharf, Putney, London, S.W. 15
 Douglas, L. M., 29, West Saville Terrace, Newington, Edinburgh
 Douglas, Thomas, Douglas Wharf, Putney, London, S.W. 15
 Dover, J. G., The Homestead, Gt. Missenden, Bucks (L.M.)
 Doyle, Miss A. M., Munster Institute, Cork
 Drakeley, Dr. T. J., Ph.D., M.Sc., F.I.C., F.C.S., M.I.M.E., 69, Rosebery Road, Muswell Hill, London, N. 10
 Drew, Edward T., 21, Congo Road, Plumstead, London, S.E. 18
 Drummond, Prof. R. J., Dairy School, Kilmarnock
 Drysdale, John, Scottish Agricultural Organisation Society, 5, St. Andrew Square Edinburgh
 Duchess of Devonshire Dairy Co., Ltd. (represented by T. R. Mills), Tiverton Junction, Cullompton, Devon
 Duckworth, Capt. E., Hooton Farm, Hooton, Birkenhead
 Dudgeon, Major C. Randolph, Cargen-Holm, Dumfries
 Dugdale, Major J. Gordon, The Abbey, Cirencester
 Dunlop, George, Craigaploch, Castle Douglas
 Dunlop, Quintin, Greenan, Ayr
 Dunn, Henry, The Leicester Arms Hotel, Penshurst, Kent (L.M.)
 Du Val, John, La Caroline, St. Peter's, Jersey
 Dyer & Son (represented by T. Dyer), Illston, Billesdon, Leicestershire
 EASTON, Edward G., 43, Gt. Tower Street, London, E.C. 3
 Eaton, George T., Thurston Hall, Framfield, Sussex
 Edmead, John W., Bury Fields House, Guildford

- Edwards, Geoffrey, 41, Lovelace Gardens, Surbiton, Surrey
 Edwards, Henry, Holland Road, West Kensington, London, W. 14
 Edwards, John P., Heath Farm, Bromsgrove, Worcs
 Edwards, Major B. M., Hardingham Hall, Hingham, Norfolk
 Edwards, Miss Katie, Ty-draw Farm, Nelson, near Cardiff
 Edwards, Sidney, Blackbirds' Nest, Bassaleg, Newport, Mon
 Edwards, W. H., Brookfield, Pinhoe, near Exeter
 Eglinton and Winton, Earl of, Horns Lodge, Tonbridge, Kent
 Ellinger, Prof., Landbohøjskole, Copenhagen (H.M.)
 Ellis, H. S., Great Brinning, Moretonhampstead, S. Devon
 Ellison, R., Colonial House, Tooley Street, London, S.E. 1
 Elmhurst Farming and Trading Co., Ltd. (represented by H. St. George Voules),
 Elmhurst Farm, Slinfold, Sussex (L.M.)
 Elveden, Viscount, C.B., C.M.G., M.P., 11, St. James's Square, London,
 S.W. 1
 Elwes, Lt.-Col. W., Oakdale, Ockley, Surrey
 Emberton, William, Home Farm, Doddington, Nantwich, Cheshire
 Emerton, Frank, 78, Grange Drive, Winchmore Hill, N. 21
 Emerton, H. J., Halesworth, 76, Windmill Hill, Enfield
 Enamelled Metal Products Corporation, Limited (represented by C. J. Porter), 56,
 Kingsway, London, W.C. 2
 Enock, Arthur Guy, Thane Works, Fountayne Road, Broad Lane, Tottenham, N. 15
 Errington, Roger, Victoria Mills, Sunderland
 Erwood, H. J., 47, Whitworth Road, Plumstead, London, S.E. 18
 Evans, J., Harrington House, Cheltenham
 Evans, Mrs. E. W., Crickleaze House, near Chard, Somerset
 Evans, Richard H., Barclays Bank Chambers, Pwllheli, Carnarvonshire
 Evans, Sir Walter H., Bart., Wightwick Hall, near Wolverhampton
 Evelyn, Mrs. J. H. C., Wotton House, near Dorking, Surrey (All communications
 to Estate Office, Wotton, Dorking)
 Evens, John, Burton, Lincoln
 Everard, W. Lindsey, Ratcliffe Hall, Leicestershire (L.M.)
 Eves, Major H., Rosemary Farm, Brenchley, Kent
 Ewing, Hugh, Birtley Farm, Bramley, Guildford, Surrey
 Fwing, M., Ashlands House, Crewkerne, Somerset
 Exeter Co-operative & Industrial Society, Ltd. (represented by F. Hannaford,
 6 & 7, Eastgate, Exeter
 Express Dairy Company, Limited (represented by R. H. Hewson), Tavistock
 Place, London, W.C. 1
 Eyre, George, 18, Redcliffe Square, London, S.W. 10
 Ezra, Capt. E., Lock, Partridge Green, Sussex (Agent : F. P. Musgrave)

- FAIRBANKS, Reginald A., Stammerham, Holbrook, near Horsham
 Fairweather, E. C., Avisford Park, Arundel, Sussex
 Farmer, John T. H., Devonia, Cippenham, Bucks
 Farmer, Samuel Wm., Little Bedwyn, Wilts
 Farmers' and Cleveland Dairies Company, Limited (represented by J. T. Horner),
 12 and 13, East Street, Gifford Street, Caledonian Road, London, N. 1
 Farwig, H. A., Mapleton Dairy Company, Mapleton Farm, Edenbridge, Kent
 Fawkes, Algernon (L.M.)
 Fawkes, F. H., Farnley Hall, Otley, Yorks
 Fawkes, Tennyson, Church Farm, Leonard Stanley, Stonehouse, Glcs
 Feilding, Lt.-Col. Viscount, C.M.G., D.S.O., Street Ashton House, Rugby
 Ferrand, G. F., Clonville Lodge, Andover, Hants
 Fewings, J. H., Ferndale, Bream, Glos
 Fewson, Mrs. A., 17, Ripplevale Grove, Barnsbury, London, N. 1
 Fielding, A. Ross, The Leazowes, Hilderstone, near Stone, Staffs
 Finch, Bernard, Flitwick, Beds
 Fish, A. R., Holme Mead, Hutton, near Preston
 Fisher, Fred T., Pinkneys Court, Pinkneys Green, Maidenhead (L.M.)
 Fison, Joseph, & Co. Ltd. (represented by Harry M. Ennals), Ipswich
 Fitzroy, Capt. the Hon. E. A., M.P., Fox Hill, West Haddon, Rugby

- Fletcher, H. G., The Galloway Creamery, Ltd., Stranraer
 Fletcher, Miss M. J., 28, Park Road, Chelmsford
 Folkestone, Viscount, Longford Castle, Salisbury (L.M.) (Agent: R. E. Macan)
 Follows, A. J., Metchley Park, Edgbaston, Birmingham, Warwickshire
 Foot, Mrs. R. M., White Hill, Berkhamsted (L.M.)
 Forester, Capt. F., M.F.H., Saxelbye Park, Melton Mowbray
 Formby, Wm., The Cedars, Stratton St. Michael, Long Stratton, Norfolk
 Forster, Miss Jane, Dairy Institute, Worleston, Nantwich, Cheshire
 Fortescue, Earl, Castle Hill, South Molton, North Devon (L.M.)
 Fortescue, George G., Boconnoc, Lostwithiel, Cornwall
 Forteviot, Lord, Dupplin Castle, Perthshire (L.M.)
 Fortnam, Joseph T., Rudge Manor, Ashley, Market Drayton
 Fortune, Robert, Newhouse, Cranleigh, Surrey
 Foster, Thomas, 27, Church Street, Ormskirk, Lancs.
 Four Oaks Spraying Machine Co. (represented by W. C. G. Ludford), Four Oaks,
 Sutton Coldfield, Birmingham, Warwickshire
 Fowler and De la Ferrelle (represented by T. W. Bridger), Porters Lane, near Royal
 Pier, Southampton, Hants
 Fowler, W. Herbert, J.P., Chussex, Walton-on-the-Hill, Epsom (L.M.)
 Fownes, Mrs. I., Yetminster, Sherborne, Dorset
 Francis, C. G., Strawberry Poultry Farm, Edgbaston Park Road, Birmingham
 Francis, E. J., Manor Farm, Stour Provost, Gillingham, Dorset
 Francis, F. S., Wilkin Throop Farm, Templecombe, Som
 Franklin, Mrs. C., Chartridge Lodge, Chesham, Bucks
 Franklin, H., Coltsfoot Farm, Datchworth, Herts
 Freeman, Miss Z. S., Dial House, Shepperton-on-Thames
 Freeth & Pocock (represented by Sir Sidney J. Pocock, J.P.), 50, Hill Road,
 Wimbledon, S.W. 19
 Freeth, Capt. Edwin, 81, West Hill, Putney, London, S.W. 15
 Fremlin, Walter T., Milgate Park, Maidstone, Kent
 French, W. T., & Son (represented by A. E. French), St. Mary Street, Ladywood,
 Birmingham
 Fuller, Major Robert F., J.P., Great Chalfield, Melksham, Wilts (L.M.)
 Fullwood & Bland (represented by Charles Bland), 31, Bevenden Street, Hoxton, N. 1
 Fulton, Robert, Atherstone, Viga Road, Grange Park, London, N. 21
 Furber, P. J., Melton Lodge, Whitchurch, Salop
- GABELL, C. D., 104, Albion Road, Stoke Newington, London, N. 16
 Gamage, A. W., Ltd. (represented by John S. Parker), Horticultural Dept.,
 Holborn, E.C. 1
 Gardner, Mrs. Chas. H., Rectory Farm, Pulloxhill, Ampthill, Beds
 Garfit, Capt. H. de C. B., J.P., Nightingale Place, near Polegate, Sussex
 Garne, W. T., Aldsworth, near Northleach, Glos (L.M.)
 Garrard, F. R., The Hall, Framlingham, Suffolk (L.M.)
 Gartons, Ltd. (represented by George P. Miln), Warrington
 Gascoigne Co., Ltd. (represented by G. H. Gascoigne), 27/28, Market Place
 Reading
 Gatty, Albert A., The Hall, Brimfield, S.O., Herefordshire
 Gibbons, Henry H., Model Farm, King's Langley, Herts
 Gibson, Miss Peggie, Dairy School, Kilmarnock
 Gibson, Mrs. M., Cofton Farm, Starcross, near Exeter
 Gibson, William, C.B.E., Walton Warren, near Burton on-Trent
 Gilbert, C. E., 47, Lenton Road, The Park, Nottingham
 Gilbert, F. W., The Lawn, Chellaston, Derby
 Giles, Henry, Stockers Farm, Rickmansworth, Herts
 Gillett, Arnold, Ridgewood, Chorley, Lancs
 Gilmour, W. P., Balmangan, Kirkcudbright
 Gisborne, Col. Lionel, C.M.G., Lingen Hall, Bampton Bryan, Herefordshire (L.M.)
 Gittins, William H., The Hall Farm, Ruyton-of-the-Eleven Towns, Shropshire
 Glazebrook, R., The Lydiate, Willaston, Cheshire
 Gloucester Incubator Company (represented by E. L. Godfrey), Woodchester Mills,
 near Stroud, Glos

- Glover, Wilfred, The Retreat, Willoughby, Waterleys, near Leicester
 Godfrey, E. L., Woodchester Mills, near Stroud, Glos
 Godfrey, J. N., Sharpenhoe, near Ampthill, Beds
 Godfrey, John, & Co., Ltd. (Represented by C. B. Carter), Railway Gates, Stamford
 Godman, Lt.-Col. A. F., East House, Great Smeaton, Northallerton, Yorks
 Goemans, H. E., Foxbury Estate Office, Foxbury, Chislehurst, Kent
 Golding, Capt. John, D.S.O., Cutbush Lane, Shinfield, near Reading
 Golding, W. J., Bowens, Penshurst, Kent
 Goldsmiths & Silversmiths Co., Ltd. (represented by J. W. Rice), 112, Regent Street, London, W. 1
 Golland, Tom J., The Mill Farm, Appleby, Doncaster, Yorks
 Good Rich Products Co., Ltd. (represented by J. Stenton), 90, Freeman Street, Grimsby
 Goode, C. N., The Haydens, Bletsoe, Bedford
 Goodwin, E., Yew Tree House, Burston, Stafford
 Goodwin, Thomas C., Leighton Grange, Crewe
 Gordon, Miss M. E., 51a, Ashby Road, Loughborough
 Goschen, Kenneth, Swanthorpe House, Crondale, Hants
 Gosling, Miss E. F., Chobham Park Farm, Chobham, Surrey
 Gosney, G. F., 234, Strand, London W.C. 2
 Grabham, A., 139, Englefield Road, Essex Road, London, N. 1
 Grace, E. G., Woolston Farm, Stogursey, near Bridgewater
 Graham, Wm., Eden Grove, Kirkbythore, Penrith, Cumberland (L.M.)
 Grant, A. P. F., M.B.E., Westlands, Horley, Surrey
 Grant, Mrs. M. A., Westlands, Horley, Surrey
 Grant, Reginald, 505, Avenue Joffre, Shanghai, China
 Grant, W. J., 42, Llanthewy Road, Newport, Mon.
 Gray, George E., Fairstead, Great Warley Essex (L.M.)
 Gray, Robert, Estate Office, Sherborne Park, Northleach, S.O., Glos
 Grayson, Thomas, 16 and 17, Queen Street, Derby
 Great Western and Metropolitan Dairies, Ltd. (represented by Sir Wm. Price), 34, Palace Court, Bayswater, London, W. 2
 Green, Wm. Henry, Brookfield, Bramhall, Cheshire
 Greenall, Sir Gilbert, Bart., C.V.O., Walton Hall, Warrington, Lancs (Agent, W. Bainbridge, Walton, Estate Office, near Warrington)
 Greenway, Capt. C. K., Stanbridge Earls, Romsey, Hants
 Greenwood, H. S., The Park Farm, Chaddingly, Sussex
 Greenwood, Lt.-Col. Charles S., M.B.E., J.P., Swarcliffe, Birstwith, Harrogate
 Gregory, W., & Co., Ltd. (represented by W. Gregory), Wellington, Somerset
 Griffin, J. Whitehouse (L.M.)
 Griffiths, Miss M. F., 1, St. Peter's Terrace, Cambridge
 Grimsdale & Sons, Ltd. (represented by D. Herbert Grimsdale), 54, Great Tower Street, London, E.C. 3
 Grimsdell, Henry John, 36, Snow Hill, London, E.C. 1
 Gurnell, Frank, West End Farm, Ashby, Scunthorpe, Lincs

- HALE, Arthur, C., Battenhurst Farm, Stonegate, Ticehurst, Sussex
 Hale, Horace, Findon, Worthing, Sussex
 Hall, Miss A., Hafodyrynys, near Crumlin, Mon.
 Hall, Miss E. M. G., Craycombe House, Pershore, Worcester
 Hall, Richard, Torrisholme Hall, Morecambe
 Hall, R. Charles, The Wend Farm, Coulsdon, Surrey
 Hambleton, Viscount, Greenlands, Henley-on-Thames. (Agent, W. F. Holt Beever Estate Offices, Yewden, Henley)
 Hambro, H. C., The Lodge, Tadworth, Surrey
 Hambro, Sir E. A., K.C.V.O., Hayes Place, Hayes, Kent (L.M.)
 Hamilton, Miss M. H., Coddington Court, Ledbury, Herefordshire
 Hamilton and Brandon, The Duchess of, Hamilton Palace, Lanarkshire
 Hamlyn & Co., Ltd. (represented by G. W. French), 45, Coplestone Road, Peckham, London, S.E. 15
 Hampshire, Frank H., Ash Villa, Upperthong, Holmfirth, near Huddersfield
 Hand, J. Denyer, The Dairy Offices, 21, Farringdon Avenue London, E.C. 4

- Hankey, Colonel Walter A. (L.M.)
 Hannot, F. Charles, Saltwood House, Hanworth Road, Hounslow
 Hansen's Laboratory, Ltd. (represented by J. C. Moller), 77, St. Thomas Street, London, S.E. 1
 Hardcastle, Major H. M., Bradshaw Hall, Bolton-le-Moors, Lancs
 Hardie, W., Manor Farm Dairy, 50, St. Leonards Road, Bexhill-on-Sea, Sussex
 Harding, G. P., J.P., Rogerstone Grange, Chepstow, Mon.
 Hardman, N., The Elms, Barton, Preston, Lancs
 Hardy, Charles, Argis Hill, Rotherfield, Sussex
 Hare, Lady Kathleen, Brokenhurst Park, Brockenhurst, Hants
 Harewood, Earl of, Harewood House, Leeds, Yorks
 Harries, T. Ll., Pilrtho, Llanstephen Road, Carmarthen
 Harrington, J. L., Beech House, Barrington Road, Altrincham
 Harris (Calne) Ltd., C. & T. (represented by R. P. Reiman), Calne, Wilts
 Harris, Stanley, Aspley Guise, S.O., Bedford (L.M.)
 Harris, W. J., The Ferns, Rogerstone, Mon.
 Harrison, A. Lister, J.P., 2, Whitehall Court, London, S.W. 1
 Harrison, R. C. H., Shiplake Court, Henley-on-Thames, Oxon
 Harrison, McGregor & Co., Ltd. (represented by T. D. Harrison), Albion Iron Works, Leigh, Lancs
 Hart, Kenneth E. F., The Limberlost, Heathfield, Sussex
 Harvey, D. G., Wooston Farm, Moretonhampstead, S. Devon
 Hasler & Co. (represented by W. Hasler), Dunmow, Essex
 Hassell, A. W., Tudor Farm, East Harptree, Bristol
 Hastings, Lord, Melton Constable Park, Norfolk
 Hatfield, E., Ministry of Agriculture and Fisheries, Welsh Office, Aberystwyth
 Hawes, Miss G. B., The Grange, Ditton Road, Surbiton, Surrey
 Hawes, Thomas, Bent Hill Farm, near Buckingham
 Hawkins, A. W. Bailey, Stagenhoe Park, Welwyn, Herts
 Hay, Percy T., 3, Brookfield Park, Highgate Road, London, N.W. 5
 Hayes & Son (represented by John E. Hayes), Stamford, Lincs
 Hayward, Colonel J. F. Curtis, Quedgeley, Gloucester (L.M.)
 Hearnshaw, R. Fletcher, Foxhill, Burton Joyce, Nottingham (L.M.)
 Heath, Mrs. Enoch, The Elms Farm, Raglan, Mon.
 Heaton, Stuart, Poplar Farm, Iken, Tunstall, Suffolk
 Heavens, William, Tilsey Manor, Bramley, near Guildford, Surrey
 Heaver, Exors. of the late John W. T., Ratham House, Chichester, Sussex
 Hebditch, Harry, Poultry Farmer and Appliance Maker, Martock, Somerset
 Henderson, Admiral W., Littlegrove Farm, Ropley, Hants
 Henderson, Exors. of the late Lt.-Col. the Hon. H. G., Buscot Park, Faringdon, Berks (Agent, Walter Crosland, Estate Office)
 Henderson, Miss Marjorie, The Riding, Hexham, Northumberland
 Henry, Colonel Frank, J.P., Elmtree, Tetbury, Glos
 Hepworth, Miss N. M., Red Court, Ealing, London, W. 5.
 Herbert, C. A., Heaselands, Haywards Heath, Sussex
 Herbert, F. F., The Graig, Penalt, Mon.
 Heseltine, Lieut.-Col. John E. N., Hawking Down, Hindon, Salisbury
 Heseltine, Major G., The Hill, Lutterworth.
 Hewitt, F. Vernon, Oaklands, Quorn, Leicestershire
 Hewthorn & Co., Ltd., (represented by Charles Simpson), 70, Finsbury Pavement, London, E.C. 2
 Heywood, N. A., J.P., Glevering Park, Wickham Market, Suffolk (L.M.)
 Heywood-Lonsdale, Lt.-Col. H. H., Shavington, Market Drayton, Salop
 Hicking, Sir William N., Bart., Brackenhurst Hall, Southwell, Notts.
 Hicks, Miss V., New Victorian Club, 30a, Sackville Street, London, W. 1
 Higgins, W., Kilburn Lane Farm, Kensal Green, London, N.W.
 Higgs, James, 2, Canterbury Road, Brixton, S.W. 9
 Hignett, L., Hook End Farm, Checkendon, Oxon
 Hill, G. & Sons (represented by E. F. Hill), Evercreech, Somerset
 Hillier's Bacon Curing Co., Ltd. (represented by John Abbott), Newmarket, near Stroud, Gloucester
 Hincks, Henry Thorp, Keyham, near Leicester
 Hindlip, Lord, Hindlip Hall, Worcester (Agent, Capt. W. Robson, Estate Office, Hindlip)
 Hinton, Robert J., Heytesbury, Wilts.

Hitchen, Thomas L., Highfields, Baddiley, Nantwich, Cheshire
 Hobbs, R. W., & Sons (represented by Stanley Hobbs), Kelmscott, Lechlade, Glos
 Hobson, J. T., & Co. (represented by Mr. Eccles), New Wharf, St. Mary's, Bedford
 Hobson, W. H., Woodhey Hall, Nantwich
 Hodge, Mrs. Arthur B., The Redings, Totteridge, London, N. 21
 Hodgson, J. D., Vicars Hill, Lymington, Hants
 Holborow, J. P., Northfield Farm, Charlton Kings, Glos
 Hole, Sidney, Yew Tree House, Albourne, Hassocks, Sussex
 Hollington, Alfred Jordan, Forty Hill, Enfield, Middlesex
 Holm, H. C., The Grange, Carlton Curliou, Leicester
 Holman, H., J.P., Holcombe Down, Teignmouth, Devon
 Holmes, John, Holmlea, Newcastle Road, Shavington, Crewe
 Holmes, W. F., The Thatched House, Hampton Wick, Middlesex
 Holmes-Hunt, W., Crawley Down, Sussex
 Holt-Thomas, G., North Dean House, Hughenden, Bucks
 Hooker, John Henry, The Firs, Buckingham
 Hoole, Mrs. G., 7, William Street, Chorley
 Hope, H. E., Hope's Wharf, Hammersmith, London, W. 6
 Hornby & Clarke (represented by H. E. Hornby), 12, The Quadrant, Richmond, Surrey
 Horne, W. Edgar, Hall Place, Shackleford, Godalming, Surrey
 Hoskin, Miss Dorothy U., Cartuther Barton, Liskeard, Cornwall
 Hosking & Sons (represented by O. H. Hosking), Fentongollan, Probus, Cornwall
 Hough, C. W., Hyde Hall, Abridge, Essex
 Howard, H. G., 39, Valkyrie Road, Westcliff-on-Sea, Essex
 Howard, Miss Margaret, 15, Victoria Square, Newcastle-on-Tyne
 Howard, Robert, Pound Farm, Esher, Surrey
 Howie, James, Hillhouse, Kilmarnock
 Howkins, Rex, Clifton Reynes, Newport Pagnell, Bucks
 Hudson, James, 8, Garden Road, Bromley, Kent
 Hughes, George, 155, Fenchurch Street, London, E.C. 3
 Hughes, Herbert E., The Bungalow, Broxbourne, Herts
 Hughes, James N., Moreton Farm, Thame, Oxon
 Humphreys-Owen, Major A. C., J.P., Glansevern, Berriew, S.O., Mon
 Hunn, Capt. K. W., Porters Farm, Otford, Sevenoaks
 Hunt, James, Ltd. (represented by E. A. Hunt), Atalanta Street, Fulham, London, S.W. 6
 Hunt, W., Traceys Farm, Berry Pomeroy, Totnes, South Devon
 Hunting, J. C., Pankridge Farm, Gt. Missenden, Bucks
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ABBREVIATIONS—(H.M.) Honorary Member. (L.M.) Life Member.

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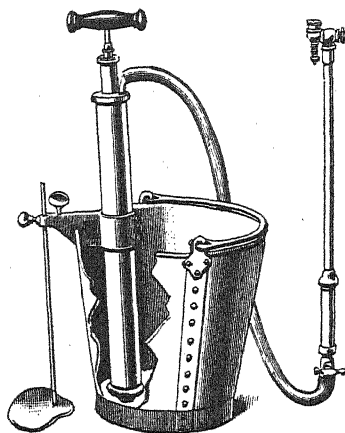
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The British Dairy Farmers' Association does not guarantee the accuracy of the statements contained in the various contributions to this Journal, nor does it necessarily, as a body, endorse the conclusions and views of the contributors: the authors themselves are solely responsible.

MANAGEMENT AND RATIONING OF DAIRY COWS.

By R. BOUTFLOUR, B.Sc.

OF the problems confronting Agricultural Science, if none were more difficult than the raising of the average milk output of the cows of this country by 50 per cent., then we should have reason to congratulate ourselves, as this increase is possible with the available knowledge, and only requires the apathy of the farmer removed and the knowledge put into practice to obtain the desired result.

The above statement is made as a result of the writer's experience on the rationing and systematic management of a very large number of cows, where it is found that, speaking generally, and taking ordinary herds, their annual average yield does not as a rule prove the respective capacity of the herds, but the degrees of management or mis-management. Any farmer, under suitable conditions and with average dairy cows, can obtain an 800-gallon average, and further, an average nearer a 1,000-gallons is within the possibility of most. Of cows that look like milkers, 50 per cent. will do the thousand gallons. This is illustrated by the yields given below, of 24 cows purchased in the open market, as second and third calvers, at second class cow price, some four years ago, and the rest three years ago. These cows are mostly non-pedigree Shorthorn, with a few Friesian cross animals. This herd was rationed and put on to systematic management January, 1923 :—

	Before		After Jan. 1st			Before		After Jan. 1st	
	1921.	1922.	1923.	1924.		1921.	1922.	1923.	1924.
Blue Bottle	715	718	807	818	Pansy ...	715	772	802	1,003
Cherry ...	606	658	730	889	Primrose ...	—	716	691	958
Crumple ...	607	613	601	919	Picture ...	692	804	868	1,121
Crocus ...	—	616	481	739	Pearl ...	—	579	1,084	791
Daisy ...	628	573	720	1,002	Ruby ...	—	597	660	775
Dansil ...	770	751	843	1,150	Spark ...	645	790	837	859
Daffodil ...	—	442	778	982	Sharp ...	551	747	868	1,114
Elsie...	684	673	789	1,028	Strawberry	677	743	629	1,014
Fancy ...	—	840	934	1,385	Sandy ...	—	519	580	845
Lofty ...	480	1,025	846	1,392	Smudge ...	—	672	857	1,014
Lilly ...	609	699	936	1,029	Tidy ...	—	802	979	1,102
Nimble ...	631	826	786	1,080					
Prosper ...	576	1,014	1,101	1,109	<i>Average</i>	659	717	792	1,004

Cows similar to the above can be bought at any time in most cow marts, and it will be seen that whereas only two yielded the 1,000

gallons before rationing, 14 out of the 24 attained the 1,000-gallon yield after a complete year's systematic management, and at the rate they are progressing this year even better results are anticipated. In the year before the system was in vogue, the average was 717, and in spite of this very much increased yield, the cows are in a much fitter condition than ever before.

Last year 19 heifers were purchased for this farm from a dealer, 17 of them calved between middle of September, 1923 and Christmas, 1923. These averaged by 30th September, 1924, 924½ gallons; six did over the 1,000 gallons, one calved on April 5th, 1924, and has done 1,000 gallons before the end of December, 1924; one on July 5th, and will do the 1,000 gallons.

This year's heifers promise to do even better than last year's, and at the present time one heifer is giving 64 lbs. per day, and as she weighs about 9 cwt. is giving her own weight in milk every 16 days. Here it might be mentioned that the above cows and heifers have received no roots since being systematically managed.

To show that the system also applies to the already high-yielding herds, below are given the yields of a small Friesian herd of 11 cows and heifers:—

	Gallons.
May	1,804
Peggy	1,541
Blackgirl	1,529
Glorious	1,381
Beatrice	1,401
Elsa	1,357
May Queen	1,301 (Heifer)
Mabel... ..	1,004
Paurin	974
Primula	945 (Heifer)
Truth	732 (Heifer)

Average for total 11 Friesians, 1270.

Average for Friesians not including heifers, 1,374.

Compare the first seven of these 11 with the first seven of the total 3,248 cows of the Salisbury Milk Recording Society for the year 1922-23:—

Salisbury Milk Recording Society—

1	over 1,800
1	„ 1,500
2	„ 1,400
12	„ 1,300

Shorthorn Herd D. is also interesting :—

Before Rationing—

1921-22.

1922-23.

35 cows. 834 average. 35 cows. 844 average.

After Rationing—

1923-24.

Mangolds failed except small quantity of Marrow Stem Kale. Therefore, no roots fed. 34 cows. 1,011 gallons average.

Shorthorn Herd rationed January, 1924.

Average, 74 cows. 1922-23 ... 704

„ 89 „ 1923-24 ... 871½

Rationed and three times milked from 1st January.

The above figures could be supported by those of many other herds, and the point they bring home is that taking cows which show promise of milk, very few will do under 800 gallons, and, contrary to our expectations, a large proportion will do over the 1,000.

In this county (Wiltshire) there are three milk recording societies, and practically all the highest yields in the three societies were for herds rationed by the writer. With average Shorthorn cows, the principles of management necessary to obtain results similar to the foregoing, are as follows :—

- (1) The cow requires a Maintenance Ration supplying .8 lbs. Digestible Protein and 6-7 lbs. Starch Equivalent.
- (2) Production Ration supplying .56 lbs. Dig. Protein and 2.3 lbs. Starch Equivalent, which must be fed according to yield.
- (3) The cow requires preparation for her lactation.
- (4) The cow's stomach must not be overloaded at any one meal, and total dry matter per day not to exceed 33 lbs.
- (5) Control of the order of feeding.
- (6) The cow must not suffer from thirst.
- (7) Efficient milking.
- (8) Non use of chaff.
- (9) Keep the cow laxative.
- (10) Supply of minerals.
- (11) Good general management.

Maintenance Ration.—One of the best maintenance rations is 20 lbs. of good hay, varying the amount in accordance with the size of the cow ; but when this amount is not available, then a total of 21 lbs. Hay and Straw and 5 lbs. Roots for every 1 lb. of Straw as :—

14 lbs. Hay.

7 lbs. Straw.

35 lbs. Roots.

With this ration the point to be remembered is that straw is not a satisfactory diet for a heavy-milking cow, and another disadvantage is that the dry matter per day for maintenance is increased, leaving less room for the production ration. This is important, for with the

cow that is giving six or more gallons it is even necessary to reduce the bulk of the maintenance ration by replacing part of the 20 lbs. Hay by a concentrated food, as follows:—

14 lbs Hay

2½ lbs. Cocoanut Cake or 3 lbs. Mixture of Bran and Oats.

Production Ration.—This should be supplied in a mixture, of which, 3 to 3¾ lbs. gives the necessary standards as illustrated by the following:—

A.—2 parts Beans, 1½ parts Oats. Feed 3½ lbs. per gallon.

B.—1 part Decorticated Ground Nut Cake, 2 parts Rice Meal, 2 parts Palm Kernel Cake. Feed 3¼ lbs. per gallon.

C.—3½ lbs. Cocoanut Cake. Feed 3½ lbs. per gallon.

D.—3½ lbs. Palm Kernel Cake. Feed 3½ lbs. per gallon.

E.—2 parts Linseed Cake, 1 part Rice Meal. Feed 3 lbs. per gallon.

F.—1½ parts Linseed, ½ part Meat Meal. Feed 2 lbs. per gallon.

G.—Maize Gluten Feed. Feed 3¼ lbs. per gallon.

Ration A. is a very useful home-grown ration, its disadvantage being its mealy nature. The writer always endeavours to get at least half the ration in the form of Cake to facilitate cudding.

Ration B.—The standard ration advocated during the last year, which has given most excellent results.

Ration C is in some cases used for the first gallon, generally when the hay is inclined to be binding.

Ration D is used in combination with rations containing large percentages of meal, so as to increase the percentage of Cake. It may be mentioned that it is difficult to find cows that do not relish this food, once they have been gradually educated to it.

Ration E is a supplementary ration for high-yielding cows, and is fed for every gallon over 4, and with heifers for every gallon over 3.

Ration F is a further supplementary ration for the last gallon, with a cow giving 7 or more gallons.

Ration G is incorporated in the general ration if cows are too laxative.

In some cases, to avoid the necessity of mixing up several different feeds, a more complex ration is made up and used for all gallons, as example:—

1 part Cocoanut Cake.

1 „ Decorticated Earth Nut Cake.

1 „ Linseed Cake.

2 parts Palm Kernel Cake.

2½ „ Rice Meal.

1 part Maize Gluten Feed.

} Feed 3¼ lbs. per gallon.

Preparation for Lactation.—The low yields of many cows is due to the condition in which they come into the dairy after calving; the neglect of the cow during her dry period is one of the greatest mistakes.

The system advocated may be briefly summarised, as follows:—

Six weeks before the cow or heifer is due to calve feed a two to three lbs. production ration, and gradually increase this until a fortnight before calving they are receiving up to six to seven lbs. per day, and in the case of heifers and cows not making a good show, up to eight to nine lbs. per day; continue this up to calving. The day before calving drench with three-quarter lb. Glaubers Salts with a little ground ginger added, and repeat this dose after calving; then start on a four gallon ration, and two days later a five gallon ration, and gradually lead the cow to her maximum yield, which, as a rule, is not attained until the sixth to eighth week after calving. If the above recommendations are adopted with average dairy cows the writer's experience is that it is an exception for them not to rise to a five-gallon yield.

The production ration advocated for preparation is Palm Kernel Cake; the art of feeding this cake is to ensure that it is kibbled large. Many farmers are afraid of preparing their cows on account of milk fever, but if your object has been attained, that is, if you have got your cow fit, then milk fever is not to be feared. On the two farms that the writer has done most of his investigation, not one cow that has been so prepared has gone down with milk fever. The point that should be appreciated is that it is a question of getting the cow fit and not fat; to realise this difference, draw a comparison with the hunter. Another advantage of preparing the cow before calving is that she has been receiving concentrated food all the time and is not suddenly fed on it after calving, with indigestion as a probable result. *Vide* the "Journal of the Ministry of Agriculture," August 1924. Rationing of Dairy Cows: "It is an exception if a cow does not attain five gallons."

Over-taring the stomach capacity.—This is responsible for most cows not reaching a high yield, or if attained, not maintaining same, and is one of the commonest mistakes in practical feeding. How often the writer has accompanied farmers on their nightly visits through the shed and found the cows grunting vigorously, the owner remarking: "Ain't they nice and comfortable." ? Surely such a remark is a good "Irishism." Let it be emphasised that grunting with cows is a sure sign of indigestion and is far removed from evidence of comfort. The overloading of the stomach is the primary cause of a large number of cows ending their days before their normal time. It should be clearly understood that the capacity of the stomach of the cow is limited, varying from 26 lbs. of dry matter per day in the case of a heifer, to 33 lbs. in a 11-cwt. cow, and that this amount must not be exceeded irrespective of highness of yield, but, on the other hand, when the cows yield is low the dry matter per day given to her should not be much below her capacity. The two cases given below illustrate the point:—

Maintenance.—20 lbs. Hay.

Production.—5 galls. at $3\frac{1}{4}$ lbs. per gallon, $16\frac{1}{4}$ lbs. Dry Matter $32\frac{1}{4}$ lbs.

Now, supposing the yield of this cow rises to six gallons and another $3\frac{1}{4}$ lbs. are added, then the chances are that indigestion will result and the yield will drop, so reduce the hay and replace part by concentrates as follows:—

Maintenance.—14 lbs. Hay, 3 Concentrates, Dry Matter, $32\frac{3}{4}$ lbs.

Production.— $19\frac{1}{2}$ lbs. Concentrates.

Now compare a cow on a very bulky Maintenance ration as the one below, which is advocated by some feeders:—

Maintenance.—14 lbs. Hay, 7 lbs. Straw, 56 lbs. Roots, Dry Matter 25 lbs.

This leaves a capacity for only a further eight lbs. dry matter or about sufficient for three gallons only, and where such a maintenance ration is fed owners often wonder why they do not obtain cows giving six or even five gallons per day.

The reason is that if a Production ration for five gallons of $16\frac{1}{4}$ lbs. of concentrates is added and the cow eats the whole of her feed, then the dry matter reaches a total of 39 lbs. One of the things we all learnt at school was that 39 into 33 “won’t go,” and if you persist in overloading the cow she will die of the disease called “Mathematics,” which disease has been responsible for many untimely deaths in the past.

To prove the importance of this the writer demonstrated with two cows that had not been raised to their possible output.

One cow “Lovely,” calved six weeks, highest yield 49 lbs.

Yield on 6th week 49 lbs.

After 1st week ... 69 „ rationed and three times milked.

Now at 19th week 62 „

One cow, “Flour.”

1st week ... 48 lbs. twice daily milking.

2nd „ ... 51 „ „ „ „

The following are daily weights on three times milking:—

3rd week ... 54, 61, 58, 60, 56, 57, 58 lbs.

4th „ ... 60 average for the week.

5th „ ... 61 „ „ „

6th „ ... 60 „ „ „

7th „ ... 60 „ „ „

8th „ ... 59 „ „ „

It was impossible to keep these cows on their original Maintenance ration, and when attempted, yields dropped lower than with twice a day milking.

If the heifers are housed together in one shed or part of a shed, then it is easier to control the quantity of hay fed, as it is obvious that the requirements in respect of long fodder is less with heifers than with mature cows.

NOTE.—As further illustrating this point, two heifers on one farm have been under experiment, 10 lbs. per day being the only bulk food, the remainder of the ration being concentrates.

One heifer has done 600 gallons in 15 weeks and still doing 53 lbs. a day; the other has done 300 gallons in 8 weeks and is still doing 58 lbs. a day.

Some will be surprised at the suggestion to feed a cow with such a large quantity of concentrates, but without it they will never get high yields, for a cow is only a factory for the purpose of converting concentrates into milk; she never produces milk from anything else but food. This food is either given her to-day or on some past occasion, and if it is produced from food given in the past then she has put that food into her back and constitution, so that when not fed daily in accordance with her yield the surplus milk is produced from her back, *i.e.*, breaking down flesh to do it. The writer has yet to find it economical to produce milk by feeding beef steaks, but if a cow is permitted to produce milk from her own flesh that is exactly what she is doing, and it is the most expensive method possible. Often on walking through the shed when a good fat cow has been pointed out, and the thin one passed by, on asking: "What about this cow?" one is told: "Oh, she is a bit thin, giving a lot of milk and its pulling her down." This will never happen if the feeding is carried out according to yield, and not exceeding the total dry matter capacity of the cow.

Further, it is not sufficient to limit the total bulk for the day, but it is also important not to overfeed at any one meal, and for this reason, heavy milking cows should receive their concentrates at least three times daily.

Order of Feeding.—Too much stress cannot be laid on this point as the order of feeding is an aid in controlling the bulk. For cows fed first thing in the morning with hay, being hungry, they will eat to satisfy themselves, and when the concentrates are given later they will eat because they relish them, with consequent over-filling. In this respect cows are like children; if a child is permitted to demolish a quantity of sweetmeats, &c., he will not over-eat himself with bread and butter, but, if hungry, and is given the bread and butter he will content himself, and when the chocolates are supplied subsequently, the previous feed will not deter him—then Epsom salts will be the order of the day.

In practice, the concentrates are fed prior to milking, and the fodder after milking, with a last feed of hay at night.

Where roots are used they should be fed separately, and mid-way between the other feeds. It must be remembered, however, that order of feeding is not sufficient to control bulk, as some cows, and heifers in particular, are liable to gorge themselves even with this measure of control.

Generally speaking, the feeder should feed little and often; also, irrespective of the quantity of food in its ration the animal should

be keen and expectant at every meal time. The time table of feeding should be as follows :—

5 to 5.30 a.m.	...	One-third Cake and Meal.
6.30 a.m.	...	One-third Hay.
10.30 a.m.	...	Half Roots.
1 to 2 p.m.	...	One-third Cake and Meal.
3 p.m.	...	One third Hay.
4.30 p.m.	...	Half Roots.
7.0 p.m.	...	One-third Cake and Meal.
		One-third Hay at night.

This time-table is applicable to the North of England where night feeding is in common practice, also where three times milking has been adopted ; but where milking is done at 3.30 p.m. in the afternoon and night feeding is not in practice, then the following modification is recommended :—

5.0 a.m.	...	Half Cake and Meal.
After milking	...	Half Hay.
11.0 a.m.	...	Roots.
3.0 p.m.	...	Half Cake and Meal.
5.0 p.m.	...	Half Hay.

This again only applies to the cows giving under five gallons and heifers under four gallons. If the respective yields exceed the above, then the ration must be distributed over three meals, the last of these to be at 7.0 p.m.

Where roots are not included in the rationing, the time-table stands without any alteration. In mixing the foods, too great a quantity should not be mixed at one time, and, when measuring, every precaution should be observed to ensure that each cow obtains a uniform mixture, otherwise one will get most of the cake, whilst another mostly meal, with a result that the balance of the ration for both cows will be upset.

The feeder's guide should be the figure representing the daily yield posted above the animal's head ; in fact, it is best to show the amount a.m., noon, and night feeds, that the cow is to receive. For example, if a six-gallon cow, she should be labelled as follows :—

Yield, 60 lbs. 2—2—2, and a five-gallon cow :

Yield 50 lbs. 2—1½—1½.

This is important, for if the feed is lumped together mistakes are often made.

If the supplementary ration is used, then the gallons for which this ration is being fed, should be chalked up in a different colour. A straight sided tin, which will just hold sufficient production ration for a gallon of milk, is the feeder's best type of measure, and he should give tinfuls at feeds in accordance with the figure above the cow's head. These figures should be adjusted each week, but only steady differences should be altered, other than normal decreases in yield, and only altered after the cause has been investigated and found impossible to remedy.

The importance of Water.—Our cows are not camels, and cannot, therefore (to be efficient), go without water for 17 or 18 hours, but if

they are compelled to do this, acute thirst must result, and this is not the condition for the successful production of large quantities of milk. Yet a very large number of cows do not get the opportunity to drink between 2 o'clock in the afternoon and 8 o'clock next morning.

Strangely enough, although there is no animal on the farm which has such a need for water, the heavy milking cow is the one that is most commonly asked to go such a period without the opportunity to satisfy its thirst. Cows should be watered soon after the morning milking and as late in the evening as practicable. The writer recommends the cows to be watered at 8 o'clock at night, when it is found 99 per cent. of them drink, also "desire for service" is often discovered at this time.

Where water is laid on to the sheds this difficulty is surmounted, and on one farm where the water was laid on from the house supply connected with a cistern filled from a ball tap, if visited any time of night that tap would be running, thus showing cows do drink at night. The importance of sufficient watering cannot be over-estimated, for if cows are allowed to go so long without water, then, when turned out in the morning from a warm shed, they gorge themselves with large quantities of water, which is at its coldest, and, consequently, the cows suffer from chills. Where cows do go this long time without water, let the farmer try a heavy milking cow at nine o'clock at night with a bucket of water and in all probability that bucket will need to be filled several times before she is satisfied. Where roots are fed in the evening they assist in relieving thirst.

Efficient Milking.—Nothing will produce poorer results than indifferent milking, and the management of milkers calls for the exercise of considerable skill. The business of the farmer should be to classify his milkers into two classes, good and bad, and to send the latter to find other employment. It is impossible to obtain the highest efficiency with indifferent milking. To discover the good milkers, the following method may be adopted: daily record and the milker to initial the figure on the Record Sheet; change the order of milkers each milking, and at the end of the month add up each milker's total, and then post up the order of results on the cowshed door and give a bonus to the man at the top of the list. The writer has known this to raise the yield 9 per cent. in 24 hours. It will be noted that the yields of certain cows are "jumpy." In these cases find out which milker generally obtains the highest yield, and let him milk her always.

Having found the best milker, then every week go through the records and note all cows that show a big drop in yield and put them under the charge of the best milker; in most cases he will bring them back, and is then available for a fresh batch which have shown a fall. As a result of obtaining high yields the men become as keen as the owner and take an equal interest in the cows, with the result that efficient milking automatically results. The system of bonus advocated by the writer is so much per cow that does the 1,000 gallons,

and so much for each gallon over an annual average of 800 gallons per cow. Where twice a day milking is in practice, the order of milking is also important; the heavy milking cows should be milked first in the morning and last at night, thereby tending to equalise their period between milking.

Three times Milking.—After a considerable experience with three times a day milking, the writer has no hesitation in stating that it is undoubtedly a paying commercial proposition, provided the herds are correctly managed. When three times milking is put into operation an average increase of $\frac{1}{2}$ gallon per cow per day is generally obtained and the rate of fall is halved; heifers respond most, and a three gallon per day heifer generally goes up to 4 gallons; not only do the cows milk better but maintain a better condition.

The system advocated for management of labour is as follows:—

For every 6 milkers employed one extra milker is required, and each man is given one whole day's holiday per week, all men being paid 2s. per week extra. The times of milking are 5.30 a.m., 1 p.m., and 7 p.m., and men are permitted to go away in the afternoon at 4 o'clock instead of 5 and return at 6.30 p.m.

It cannot be too strongly emphasised that a heavy milking cow should be milked three times per day, and she will well pay for the extra trouble and expense involved. The following figures illustrate the value of three times milking consistent with good management.

Name and Date of Birth.	Yield galls.	Days.	Calf.	Of
Thanet—	654	293	1st	23/11/1920
December 2nd, 1917	674	294	2nd	14/1/1922
	1,293	406	*3rd	22/1/1923
	1,227	315	*3rd	22/1/1923
	1,179	210	*4th	28/4/1924

To 30th November, 1924, and still giving nearly 4 gallons daily.

Rose—	59	261	1st	10/10/1919
December 20th, 1916	65	271	2nd	4/10/1920
	72	295	3rd	21/9/1921
	1,353	315	*4th	6/11/1922
	1,404	375	*4th	6/11/1922
	1,412	300	*5th	31/1/1924

To 30th November, 1924, and still giving over $1\frac{1}{2}$ gallons daily.

Snowdrop—	715	250	1st	13/1/1918
December 15th, 1914	790	315	2nd	14/2/1919
	800	255	3rd	16/3/1920
	956	294	4th	7/3/1921
	988	305	5th	26/2/1922
	1,151	307	*6th	20/2/1923
	1,001	268	*7th	26/2/1924

To 30th November, 1924, and then giving over $\frac{1}{2}$ gallon daily.

Milked three times daily with calves marked *.

Duchess—	726	329	*1st	5/10/1919
September 6th, 1916	777	244	2nd	8/11/1920
	824	315	3rd	17/9/1921
	871	374	3rd	17/9/1921
	1,420	315	*4th	9/1/1923
	1,846	562	*4th	9/1/1923
SOLD.				
Daisy—	858	285	3rd	16/11/1920
September 19th, 1915	846	293	4th	17/11/1921
	1,210	275	*5th	21/11/1922

Milked three times daily with calves marked *.

Non-use of Chaff.—It has been a common practice in many districts to chaff straw, mix with pulped roots and concentrates, bag the mixture and call it "Bato." All this entails a very large amount of work, and a sound reason for the advantage of this method has still to be put forward. The detrimental results are clear, and they are :—

(1) The cow is prevented from controlling the bulk of her food because she has to eat the chaff to obtain the roots and concentrates.

(2) The cow is not permitted to select for herself that portion of the straw which she desires ; this freedom of selection is important, and the lower portions of the straw stems are woody in nature and very indigestible, and will neither help to maintain the cow or produce milk.

(3) A high yielding cow has no room for straw, also the straw tends to make the condition of the cow not sufficiently laxative.

The one reason put forward is that the cow is prevented from leaving any straw, but she is in a far better position than the feeder to judge "enough," and if deluded into further eating, then indigestion will possibly mean an early grave. The writer is convinced that the chaff-cutter has sent more cows away in the knacker cart than any other invention of man.

Chaffing does not make bad hay good nor straw a suitable feed for a high yielding cow, so hay and straw should be fed long. If the former, some portions will be poorer than others, so permit the cow to pick the best and the feeder should bear in mind that his object is not to fill the cow and give her indigestion, but to feed her in order to maintain life and produce milk ; universally the latter is the object, but how often the former is the result ? Finally, with regard to this point it necessitates a lot of time mixing all this food, and keeps the feeder far too busy, which is not conducive to efficiency ; therefore, reduce the labour and keep the method simple.

Keep the Cow laxative.—For years it has been advocated that succulent foods, particularly roots, was essential if it was desired to obtain high yields. At this point the writer desires definitely to assert that for winter feeding, roots, or other succulent foods, are not essential,

and further, that they have no particular virtue. In cases where the cost of growing or purchase is high, they should be excluded from the ration. Most of the high yields referred to in this article have been obtained either without any roots at all or in other cases with only a very small quantity.

It is essential, however, that the cow should be laxative, and this condition can be obtained if care is used in the selection of the feeding stuffs, and the results obtained without roots will be equal, if not better, than with roots. Roots and other succulents have been a determining factor in the past, because feeders would use such binding foods as chaff. Undecorticated Cotton Cake, and other substances containing large amounts of crude fibre, and with such conditions heavy root feeding is essential, for nothing less than 60 lbs. of roots or a dose of Epsom Salts would ever force the material through the cow, and as the latter isn't grown on the farm, resort was made to Roots.

To test the condition of laxativeness, put the hand flat on the ribs of the cow and it should be possible to pull the skin together by closing the hand without the fingers slipping; also the solid excreta should not be firm.

Supply of Minerals.—This important point is often over-looked, especially with the heavy milking cow. A deficiency is shown when the animal tends to refuse the concentrated food, and there is more or less rapid fall in the milk yield. The introduction of minerals is perhaps best accomplished through the media of the crop to be fed. Salt, phosphates and chalk are the minerals most commonly deficient and therefore it is essential to see that the hay fields have an adequate supply of lime and phosphates. From the foregoing it will be understood that the amount of minerals will vary on different farms, and no general ruling can be made as to the proportion or quantities to be added to the ration, but small quantities of salt, steamed bone flour and ground chalk in the proportion of 2 salt and 1 each of the latter proves useful. If any doubt exists, put a small box containing the mixture of chalk, steamed bone flour, with a lump of salt in the middle within easy reach of the cow.

Summer Feeding.—The principles of summer feeding are the same as in winter, but now the grass is for Maintenance, also in addition, counts towards production. Good grass will provide sufficient nutriment for production up to a 3-gallon daily yield, and a supplementary ration of concentrates should be fed for every gallon over 3, so that a 5-gallon cow on good grass would receive a production ration for 2 gallons, whereas a 3 or 2-gallon cow would not receive any concentrates. Then as the season advances, a tendency to fall off in yield will be experienced; at once the productive value of the grass must be reduced, and concentrates fed for all gallons over 2 as yielded by the individual cow. When still further falls are experienced, supplement the grass for the first two gallons by adding a concentrated

cake like Decorticated Cotton or Ground Nut Cake, commencing with 1 lb. per cow per day and increasing the quantity as signs of general fall in yield occur.

The writer strongly advocates the housing of the cows during the heat of the day for 3 or 4 hours and the feeding of the concentrates whilst indoors at this time; where three times milking is in practice it is advisable to house the cow from the mid-day to the evening milking. This is to prevent over-gorging with grass and to allow a fuller digestion of the concentrated food given. Another advantage is that the cows are not worried by flies, and given a respite from the heat of the sun (if experienced).

General Management.—The following should be a guide to a herd owner in determining the degree of efficient management:—

(1) Heavy milking cows should not lose flesh.

(2) Between the 6th and 10th week after calving there should not be a sudden drop in yield. This points to insufficient feeding, as a result the cow has wearied of taking food off her back.

(3) Yields should not go up on going out to grass. If this occurs it is a reflection against the winter management; either the cows have not received sufficient and suitable foods or they have not been kept sufficiently laxative or thirst may have been the limiting factor. On going out to grass the cause will be remedied by the provision of nature. In this respect the question of bulk control should not be overlooked as a possible cause.

The following figures will illustrate the fact that yields should not increase on turning out to grass, *i.e.*, provided the winter management has been efficient:—

NOTE.—These herds were turned out to grass between the middle of April and beginning of May.

Date.	Total Galls.	No. of Cows in Milk.	Average per Cow.
January ...	287	86	3.3 gallons
February ...	292	89	3.3 "
March 15th ...	302	89	3.4 "
April 15th ...	273	94	2.9 "
May 15th...	280	95	2.9 "
June 15th ...	240	95	2.5 "
Average per cow per day through winter ... }			2.8 gallons

Date, 1924.	No. of Cows.	Gallons.	Average per Cow.	
			In Milk.	Per Total No. of Cows.
January 13th ...	35	134	3.8	3.35
February 17th ...	40	152	3.8	3.0
March 16th ...	39	131	3.36	3.28
April 13th ...	39	121	3.10	3.00
May 14th ...	39	119	3.05	3.00
June 15th ...	39	112	2.87	2.8
Average			3.4	2.9 for winter

Date.				Cows.	Average per Cow per day.
October 15th ...	...	...	...	10	2.4
November 15th ...	...	...	...	13	3.1
December 15th ...	...	...	...	13	3.3
January 15th ...	...	...	...	12	3.8
February 12th ...	...	...	...	15	3.6
March 12th ...	...	...	...	15	3.6
April ...	...	...	...	*15	3.6
May ...	...	...	...	14	3.4
June ...	...	...	...	15	3.2

* Cowman ill.

Date.				Cows.	Average per Cow per day.
October 20th ...	...	...	...	20	2.6
November 18th ...	...	...	...	23	3.1
December 16th ...	...	...	...	25	3.4
January 20th ...	...	...	...	32	3.6
February 17th ...	...	...	...	32	3.5
March ...	...	...	...	34	3.6
April 14th ...	...	...	...	34	3.6
May 12th ...	...	...	...	34	3.6
June 16th ...	...	...	...	33	3.2

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apl.	May	June
In Milk ...	7,147	7,448	8,318	7,643	7,976	8,691	8,411	8,072	6,585
Monthly average per cow ...	106	107	116	114	122	131	126	125	121
Average per cow per day ...	67.4	69.6	71.7	67.0	65.4	66.3	68.6	64.6	54.5

Turned out in water meadows end of March.

On all the above farms the grass land is of an excellent character. The old story that grass is the natural food for the cow may be classified as a fairy tale, for the cow in these days is not a natural cow, but what breeding has made her; nor is grass natural grass, but the result of cultivation and manuring. The nearest approach to both, in their natural state, is the Bison in the wilds of North America. The only reason why grass in May and June gives an increase on many farms is that it does not lend itself to so much mismanagement.

Likewise slight falls in the yield should not be allowed to pass unnoticed; if a cow drops a couple of pounds then it should be investigated and it will be found generally to be either inefficient milking, indigestion, incorrect feeding or a chill. Having found the cause, remove it. If the cause be indigestion, straight away give $\frac{3}{4}$ lb. Glauber's Salts with a little ginger, and then feed rather above the yield. Keep the hay down and have her milked by the best milker on the farm.

Changes of food should be avoided as much as possible; if unavoidable, then the change should be gradual. On January 3rd on Farm A the cows were getting old hay, July harvested of year 1923; on January 4th they went on to June hay, 1924, the best hay on the farm; the 52 cows were giving 189 gallons per day on the 3rd and they dropped back to 175 gallons and remained steady for about 4 days. The whole lot were given a milk purgative, and in a fortnight they had exceeded their previous normal yield and were up to 191 gallons.

On first sight it would appear that the difference in the hay feed had depressed the yield, whereas it was due entirely to the change.

Milk Recording.—Systematic managing and feeding of a herd is essentially dependent on milk recording, and without some system of recording this is impossible and for A1 efficiency daily recording is desirable.

Milk recording in itself is of very little use; it is the interpretation and use of the records that are so valuable. Recording with a view to obtaining high yields without proper management will in all probability even do harm, for there are two distinct types of high yielding cows, the cow which gives a high yield only when correctly managed, and, unfortunately, the cow that will give a high yield in spite of mismanagement, but at the expense of its constitution. This latter is the type that is often prevalent in recorded herds and, as a class are selected for breeding. As a result the cows do not last, and most of them with high yield are tubercular; under these conditions, very high yields actually tend to ruin the cattle. A Master of Foxhounds recently remarked to the writer, "I like these recording people, they maintain the supply of cattle at the Kennels." Had those cows been managed they would have given higher yields, but not at the expense of constitution and the other cows in the herd with good constitutions would also have given high yields. Selecting from yields, without management has left us a legacy of some heavy-milking poor-constituted cows, forcibly showing that it is dangerous to select from

high-yielding stock unless those yields have been obtained by management, *i.e.*, from food and not constitution.

Economies of Milk Production.—There are three main channels in which science can help the dairy farmer to obtain an increased return from his business :—

1. By reducing the cost of feeding.
2. By increasing the yield.
3. By lengthening the life of the cow as a result of better management.

1. Judicious manuring will cheapen the cost of production of the home-grown foods. With purchased foodstuffs, a balanced ration compounded from the cheapest foods forward bought on a favourable market, will considerably reduce the cost, in some cases as much as 1d. to 3d. a gallon. This latter aspect has received a great deal of attention of late, particularly by the Research Institute in Dairying at Reading, and this institute has been responsible for the origin of the work connected with the rationing of cows in this County.

2. Higher yield with efficiency is the greatest factor in increasing returns, and has not received the attention that it deserves. The following will illustrate its importance :—

Per Winter—

One gallon average.		Two gallon average.		Three gallon average.		
1/9		1/9	4d.	1/9	4d.	4d.
		s. d.		s. d.		
Cost	...	2	1	2	5	
Value	...	2	6	3	9	
Profit	...	0	5	1	4	

The cost of the first gallon includes the Maintenance ration and the 3½ lbs. first gallon Production ration, also the standing charges—Depreciation, Interest on Capital, Labour, Rent and Rates on Buildings, and other expenses.

The above clearly illustrates that by increasing the yield in the winter from a 2-gallon average to one of 3-gallon the return is actually increased threefold.

Some readers may doubt the 3-gallon average during winter, but the writer has many dairies systematically rationed which never did more than 2, but are now well over a 3-gallon average, based on all cows in the herd, including those dry.

There is nothing that will lend itself to management more readily than a dairy cow, and, what is more, the financial returns will adequately justify the same. All the details of the foregoing system have been well tested out in practice, and all results based on yields which were officially recorded. (NOTE.—To facilitate working, all yields expressed in gallons have been calculated on the basis, 10 lbs. to the gallon.)

In conclusion, the writer again states the following facts, which can be vouched for and without fear of contradiction :—

1. One cow in two that looks like milk will do a 1,000 gallons.
2. That these cows are obtainable at most marts, without the payment of fancy prices.
3. That a 1,000 gallon average is within the province of any farmer who desires the same and who is prepared to adopt efficient management as the keynote to success.

SHORT CUT TO BALANCING RATIONS.

- 1 Ground Nut Cake, add 2 cereals. Feed 3 lbs. per gallon.
 1 Decorticated Cotton Cake, add 2 cereals. Feed $3\frac{1}{2}$ lbs. per gallon.
 1 Egyptian Cotton Cake, add 1 cereal. Feed $4\frac{1}{2}$ lbs. per gallon.
 1 Soya Cake, add 2 cereals. Feed $3\frac{1}{2}$ lbs. per gallon.
 1 Linseed, add $\frac{1}{2}$ cereals. Feed 3 lbs. per gallon.
 1 Semi-Decorticated Ground Nut Cake, add 2 cereals. Feed $3\frac{1}{2}$ lbs. per gallon.
 1 Undecorticated Ground Nut Cake, add $1\frac{1}{2}$ cereals. Feed $3\frac{3}{4}$ lbs. per gallon.
 1 Beans, add $\frac{3}{4}$ cereals. Feed $3\frac{3}{4}$ lbs. per gallon.
 1 Dried Yeast, add 2 cereals. Feed 3 lbs. per gallon.
 Bran, add — cereals. Feed $5\frac{1}{2}$ lbs. per gallon.
 Dried Grains, add — cereals. Feed $4\frac{1}{2}$ lbs. per gallon.
 Palm Kernel Cake, add — cereals. Feed $3\frac{1}{2}$ lbs. per gallon.
 Cocconut, add — cereals. Feed $3\frac{1}{4}$ lbs. per gallon.
 Sharps, add — cereals. Feed 4 lbs. per gallon.

NOTE.—Cereals include Oats, Barley, Maize, Rice Meal, Wheat.

EXAMPLE.

- 2 Decorticated Ground Nut.
 1 Egyptian Cotton.
 1 Linseed Cake.
 2 Soya.

Then set out as follows :—

	Cereals.	Feed per gallon if fed separately.
1 Decorticated Ground Nut	... 2	3 lbs.
1 Decorticated Ground Nut	... 2	3 "
1 Egyptian Cotton ... ..	... 1	$4\frac{1}{2}$ "
1 Linseed Cake ... ..	... $\frac{1}{2}$	3 "
1 Soya ... ..	... 2	$3\frac{1}{2}$ "
1 Soya ... ..	... 2	$3\frac{1}{2}$ "
Cereals to be added		<hr/> $9\frac{1}{2}$ <hr/>

Add $9\frac{1}{2}$ cereals to feed $3\frac{1}{2}$ lbs. per gallon.

Say, $3\frac{1}{2}$ Oats (Crushed), 3 Rice Meal, 3 Maize Meal.

THE ECONOMICS OF MILK DISPOSAL.

By LEONARD J. LORD.

PRIZE ESSAY.

THE quantity of milk produced and put on the market in this country during the past three years has far outstripped the demand for this commodity, in a fresh liquid state.

This situation developed rapidly, and would appear to have been due to the influence and interaction of various causes, chief among which may be cited the following:—

1. The high selling price of milk consequent upon post-war conditions.
2. The low purchasing capacity of a population, of whom large numbers were among the unemployed.
3. The competition of condensed, evaporated and dessicated milks, all marketed in a form that lent itself well to occasional, rather than to regular, purchase.
4. The comparatively low prices of other farm products, which came more readily under the blight of falling values.
5. The "basic quantity" clauses in the N.F.U. contracts between farmer and milk-factor.

Many milk producers have, therefore, seriously considered the abandonment of dairying altogether, especially in view of the more encouraging prices that have been obtained for certain other products of the farm during the past twelve months.

Dairy farms, however, are not readily turned to purposes other than dairying, and dairy farmers, naturally, like to keep to a department they well understand; that keeps up the special interests of their women folk; and that has a charm for the sake of the work itself.

If the milk is not sold off the farm, material is provided, on the one hand, for the rearing of young stock in conjunction with butter-making, and, on the other, for pig feeding when milk is manufactured into cheese.

THE CONSIDERATION OF WHAT FORM OF MILK DISPOSAL IS BEST SUITED TO THE FARM.

The suitability of any particular farm for milk production, with the adaptability of the homestead for dairying, in one form or other, is a matter that has probably been settled in a generation before our time, and, as it is not here intended to suggest the extension of milk production, but only to discuss how most profitably to dispose of milk, we have to consider first, the suitability, or otherwise, of the farm for selling the liquid milk, rather than for turning it into a manufactured product.

During the later years of the War, and the short time of high prices for farm produce that followed the Armistice, many farmers

entered into milk-selling contracts, only to find that, in their circumstances, milk-selling was profitable only so long as high prices prevailed.

A resumé of the circumstances, relating to the farm conditions, which have an important economic bearing on whether milk selling is a suitable means of disposal, is now given.

A good milk-selling farm :—

1. Should have a plentiful supply of cold water.
2. Should be near to rail, or place where the milk is to be delivered.
3. The roads, which have to be traversed in all weathers, night or day, should be good ones.
4. Requires buildings that are convenient for the work of cooling milk; for calving cows all the year round, or for housing newly purchased calven cows at all seasons.

If the farm does not answer satisfactorily to these requirements, *it is not a milk-selling farm*, unless, in default of item 2, the milk is collected by the purchaser—as it still is in some outlying districts—or, can be sent to a creamery or cheese factory, near at hand, which is, of course, equivalent to a near market.

In either of these cases the price of milk will be lower than if delivered to rail or town, and can the more closely be compared with the costs of manufacturing milk products on the farm.

The following is an extract from Clause 2 of the operative part of the Milk Contract Form approved by the N.F.U. for October, 1923, to September, 1924, that is, the twelve months completed before the advent of the present winter season, for contracts to creameries :—

“The price per imperial gallon for each month during the continuance of this agreement shall be—(less the amount of the railway carriage and twopence per gallon in the winter, *i.e.*, October to March, and one penny per gallon in the summer, *i.e.*, April to September) for 95 per cent. of the basic quantity supplied in the three months, December, January, and February.”

TABLE I

TABLE OF COMPARATIVE PRICES REALISED FOR MILK DURING THE SIX WINTER MONTHS OF 1923-1924.

Full Contract Price for 95% of the Basic Quantity,			Per Imp. Gallon.
Month.	d/d carriage paid to London.	d/d to Creamery.	Manufacturing Price for Surplus Milk d/d to Rail.
	s. d.	s. d.	s. d.
October, 1923	1 5	1 3	0 10
November, 1923	1 5	1 3	0 9½
December, 1923	1 8	1 6	0 9¼
January, 1924	1 8	1 6	0 9¼
February, 1924	1 8	1 6	0 9
March, 1924	1 5	1 3	0 7
Six Months' Average ...	1 6½	1 4½	0 9

TABLE I.—*Continued.*

TABLE OF PRICES FOR THE FOLLOWING SIX SUMMER MONTHS UNDER THE SAME METHODS OF CLASSIFICATION AS FOR WINTER.

Full Contract Price for 95% of the Basic Quantity.				Per Imp. Gallon.
Month.		d/d carriage paid to London.	d/d to Creamery.	Manufacturing Price for Surplus Milk d/d to Rail.
		s. d.	s. d.	s. d.
April, 1924	... ..	1 0	0 11	0 7
May, 1924	... ..	1 0	0 11	0 7
June, 1924	... ..	1 0	0 11	0 7½
July, 1924	... ..	1 0	0 11	0 7¾
August, 1924	... ..	1 0	0 11	0 8
September, 1924	... ..	1 0	0 11	0 8
Six Months' Average	... ..	1 0	0 11	approx 7½

ESTIMATE OF COMPARATIVE VALUE "INTO POCKET" PER IMPERIAL GALLON.

Full Contract Price for 95% of the Basic Quantity.				Per Imp. Gallon.
Month.		d/d carriage paid to London.	d/d to Creamery.	Manufacturing Price for Surplus Milk d/d to Rail.
		s. d.	s. d.	s. d.
Winter	... ..	1 5½	1 4½	0 9
Summer	... ..	0 11	0 11	0 7½

These prices, of course, cannot be taken on their face value as forming a true comparison. So much depended on the individual farmer's circumstances, and the way in which he was able to carry out any plans for the economic adjustment of quantities.

There were also, beyond a further paragraph in Clause 2, allowing for a seasonal increase during the summer months, certain other clauses, one relating to possible increases in price, and another as to contributions to a mutual fund for advertisement purposes. These latter, operated in such few instances to the advantage of the farmer, that they may be ignored in this essay.

As regards railway charges, some fortunate milk producers had only a ½d. per gallon to pay as the cost of carriage on rail, but many, at greater distances from market, and especially where a purchasing agent's commission had to be paid, were subject to disbursements of fully 2d. per imperial gallon.

It does not, therefore, seem unequitable to consider that the average total cost of railway carriage, amounted to at least 1d. per gallon on all railed milk; upon which assumption the Estimate of Comparative Value "into pocket," of railed milk, is based.

As regards the full contract price, it is, of course, undeniable that many farmers, favourably situated, especially in respect to seaside, inland, or general holiday resorts, have been able to make seasonal prices for fresh milk in advance of those given, but they were probably under the disability of having to supply a definite quantity daily, or a quantity variable at the option of the buyer, and had to be prepared to dispose of the uncertain surplus as best they could.

On the other hand, a very large proportion of the smaller dairy farmers sold their milk supply on a straight-price marginal contract, that is, with a seasonal margin, but no "basic" or "standard" quantities to take into account, and no "surplus" clause. But they would have sold at a price appreciably lower than the N.F.U. figures, and subject to the old-style rules of being liable to a request to keep back any quantity over and above the contract maximum (*i.e.*, the surplus over the buyer's requirements) when the milk flow was abundant and therefore was providing a good income.

Buttermaking Returns.—To consider now the easier of two alternatives to milk selling, that of making butter—work that requires a minimum of expense; can be done at times convenient to the working arrangements of the farm household generally; and that requires neither exact training, nor long experience, to give very creditable results, in the hands of a careful and intelligent worker.

TABLE II.

TABLE OF THE AVERAGE PRICES REALISED FOR FIRST QUALITY ENGLISH BUTTER AT VARIOUS CENTRES IN CERTAIN DISTRICTS FOR TWELVE MONTHS.

Prices in pence per lb. to the nearest farthing.

Months 1923.	South of England.	S.W. of England.	Cornwall.	South Wales.	North Wales.	West Midlands.	Eastern Counties.	North of England.	Average of all Markets.
	d.	d.	d.	d.	d.	d.	d.	d.	d.
October ...	25	24	22	24	24	24	25½	25	24
November ...	27	28½	23	24	27	25	27½	27	26
December ...	29	28	25½	25½	28	25½	29	29	27½
1924.									
January ...	26½	27	26	25	28	25	28½	27	26½
February ...	27	26	25½	25½	29	25	28	26	26½
March ...	24½	21½	25	23½	21	23	28	25½	24
Winter Average	26½	26	24½	24½	26	24½	27¾	26¼	25¾
April ...	17½	20	18½	21½	21	21	24	23	20¾
May ...	17	20	15	19½	16	18	19	19	18
June ...	19	21½	15	19½	—	18½	21	18½	19
July ...	25	24½	17½	20½	19	20	25	20	21½
August ...	26½	25	21½	21½	25	25	28½	23	24½
September ...	26¼	27	20	24½	27	24	26½	24	25
Summer Aver.	22	23	18	21	21½	21	24	21¼	21½

In relation to butter-making returns, we have to take into account the value of the bye-products, separated milk and buttermilk. As there is little scope for selling any considerable quantity of either of these except in special circumstances, it seems reasonable to base their value, whether used for stock feeding or household purposes, upon their feeding value compared with that of purchased cattle foods.

Now, both separated milk and buttermilk contain weight for weight, more food units than swede turnips, and they both have a higher value if reckoned in starch equivalent. The value of swedes on the farm is given for the month of November, in "The Ministry of Agriculture Journal" as 19s. per ton.

Compared with what has to be paid for concentrated foods in terms of their composition, we get the following results:—

TABLE III.

	Oil.	Albs.	Carbs.	Total Food Units.	Value at 2/1.	Starch Equiv.	Value at 2/5.
Separated Milk ...	·2	3·3	5·0	13·0	27/1	8	19/4
Butter Milk ...	·4	3·0	5·0	12·8	26/6	8	19/4
Swede Turnips ...	·2	·25	8·0	9·0	18/9	7	16/11

To get at the matter shortly, if it be admitted, that, although not the same class of food, the digestible value of the food units in the milk offals is equal to that of those in swedes, then the dairy bye-products, containing a greater quantity, weight for weight, are worth at least one-fifth more than the roots, and therefore may be priced at £1 2s. 9d. per ton, or approximately 13½d. per cwt. (that means, if it is more readily realised in measure, about 11 gallons.)

Now, every pound of butter made from separated cream, has an equivalent yield of 23 lbs. of separated milk and 2 lbs. of undiluted buttermilk to its credit.

The value of this amount of bye-product may be shown as

$$\frac{\text{£1 2s. 9d.}}{2240} \times 25 \text{—that is approximately 3d.}$$

This additional sum of 3d. for each pound of butter has to be added to the returns for butter-making. Considering it in terms of milk values, it adds at least 1d. per gallon to the value of milk in butter-making, all the year round.

Cheese-making Returns.—The alternative to butter-making, if the milk is to be kept on the farm, is cheese-making.

Here we have many market variations in price, due to season and locality, as well as the type or variety of cheese, to take into account.

Cheese-making can hardly claim to be a more precise art than that of making butter, but it certainly requires more application, more study, and more sustained attention to detail, than the latter.

It follows, that, whereas few farming localities are known where butter is not made, whole districts know nothing of the practice of

cheese-making on the farm, and in this generation recourse must be had to one of the many cheese-making schools, or to a maker of repute in a factory, or a cheese-making farm at a distance.

It may be mentioned here, that only two or three of the several varieties of cheese can be made with success during the winter, and there remains the alternative of butter-making during the cold season of the year, or possibly winter milk-selling, which is a much simpler matter at such times than in the heat of summer.

TABLE IV.

TABLE OF AVERAGE PRICES REALISED EACH MONTH BY THE MAKERS OF ENGLISH CHEESE FOR FIRST QUALITY PRODUCE.

1923-1924. Fourteen consecutive months. Summarised below.	Varieties of Cheese.							
	Cheddar.	Cheddar Loaf.	Cheshire.	Derby.	Leicester.	Lancashire.	Wensleydale.	Caerphilly.
1923.	Reduced to the nearest farthing per pound.							
October ...	13 $\frac{1}{4}$	14	15	13	13 $\frac{1}{2}$	16	13 $\frac{1}{2}$	12 $\frac{3}{4}$
November ...	13 $\frac{3}{4}$	14	15	14	13 $\frac{3}{4}$	16	14 $\frac{3}{4}$	12 $\frac{3}{4}$
December ...	12 $\frac{3}{4}$	13 $\frac{3}{4}$	16 $\frac{1}{2}$	13	13 $\frac{1}{2}$	16	14 $\frac{3}{4}$	10 $\frac{1}{2}$
1924.								
January ...	13	13 $\frac{1}{2}$	16 $\frac{1}{2}$	13	13 $\frac{1}{2}$	16	15	10 $\frac{1}{2}$
February...	12 $\frac{3}{4}$	14	15	12 $\frac{1}{2}$	14 $\frac{1}{2}$	13	14 $\frac{3}{4}$	10 $\frac{1}{2}$
March ...	11 $\frac{1}{4}$	12 $\frac{1}{2}$	12	10	13	10 $\frac{1}{2}$	14 $\frac{3}{4}$	8 $\frac{1}{4}$
April ...	11 $\frac{1}{4}$	10 $\frac{1}{2}$	10 $\frac{1}{4}$	10	12 $\frac{1}{2}$	10	12	7 $\frac{3}{4}$
May ...	9 $\frac{3}{4}$	10 $\frac{1}{4}$	9	9	13	8 $\frac{3}{4}$	10 $\frac{3}{4}$	7
June ...	9 $\frac{3}{4}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$	9	12 $\frac{1}{2}$	10	8 $\frac{1}{4}$	8
July ...	9 $\frac{1}{4}$	9 $\frac{1}{2}$	9	10 $\frac{1}{2}$	13	12	8 $\frac{1}{4}$	11
August ...	10 $\frac{1}{4}$	10 $\frac{3}{4}$	11	10 $\frac{1}{2}$	13	13	10 $\frac{3}{4}$	9 $\frac{1}{2}$
September	10	11	12	11	14	14 $\frac{1}{2}$	12 $\frac{1}{2}$	12 $\frac{1}{2}$
October ...	10 $\frac{3}{4}$	12 $\frac{1}{4}$	14	13 $\frac{1}{2}$	14	15 $\frac{1}{2}$	14	13 $\frac{1}{4}$
November	10 $\frac{3}{4}$	12 $\frac{1}{4}$	14	13 $\frac{3}{4}$	14	16	16	14 $\frac{1}{4}$
6 months' average	10	11	11 $\frac{1}{8}$	11 $\frac{1}{4}$	13 $\frac{1}{2}$	13 $\frac{1}{2}$	11 $\frac{3}{4}$	—

of Summer Milk sold as cheese six months later.

The Season Averages work out as follows:—

Average price of Caerphilly Cheese, winter made, sold November to April, 10d.

Average price of Caerphilly Cheese, summer made, sold April to September, 10 $\frac{1}{2}$ d.

Average price of all other varieties, summer milk, sold June to November, 11 $\frac{3}{4}$ d.

Average price of highest priced varieties, Leicestershire and Lancashire summer milk, 13 $\frac{1}{2}$ d.

The Bye Product in Cheese-making.—Having reviewed the possible returns from the cheese sales, it remains to consider the value of the whey for pig feeding.

This may be estimated on the same basis as separated milk at 2s. 1d. per food unit, of which it contains eight (8), or its value may be considered in comparison with feeding treacle, again not a food of quite the same class, but similarly, a food whose chief constituent is sugar.

Feeding treacle is now worth (November) at least £8 per ton in the provinces—it is costing nearer £10 to get it home—and contains seventy (70) units of sugar, worth at the first-named value 27½d. per unit.

Whey contains 5 units of sugar and the equivalent of 3 units in albuminoids and milk-fat. Whey is, therefore, worth $27\frac{1}{2} \times 8$ or 220d. that is 18s. 4d. per ton on the treacle basis of valuation, or at least 2s. 1d. $\times 8$, that is, 16s. 8d. per ton, valued on the same basis as buttermilk.

Now, every gallon of milk, which we shall reckon as equivalent to a pound of mature cheese, releases 9 lbs. of whey when being made into cheese. This is worth fully 8-10ths of a penny on the above reckoning, so that if we consider its value as three farthings ($\frac{3}{4}$ d.) in addition to every pound of cheese, it will not be overstated.

We are now in a position to show a calculated statement of the probable returns, winter and summer, of these different methods of milk disposal, but in doing this it will be necessary to make some more or less arbitrary assumptions, based on probabilities from a knowledge of the trade, when dealing with such a problem.

The factors of calculation are taken as follows:—

Milk Selling—Basic Quantity.—Estimating the basic quantity supplies, i.e., during December, January, and February to have been exceeded in the other three months by a third, we get the total of the basic quantity over the six winter months, taking one-seventh of the whole, for each month.

Six of these sevenths is the quantity of which 95 per cent. was paid for at full contract price. The other 5 per cent. must be added to the remaining one-seventh of the total supply, and this we must credit to the milk account at manufacturing price (winter average).

In order to make provision for the seasonal increase in summer, the winter supplies are taken as having amounted to only 90 per cent. of the summer supplies, or rather of the “size of the dairy” (as measured in relation to the outlay on plant, &c., although at the same time a “margin of capacity” has been allowed for).

It follows that of the full 100 gallons daily supply in the summer, the basic quantity is calculated from that of the winter, plus 13 per cent. of itself (approximated from two months’ increase allowed at 10 per cent. and three months at 15 per cent). When this seasonal basic quantity is found we must take 95 per cent. of it as worth the

full contract price, leaving the whole of the remaining supplies to be put down at the average summer manufacturing price.

We cannot avoid this average of six months, except when we are working entirely on actual figures, calculated month by month.

Butter-making.—Here we allow that 11 quarts of milk are equivalent to one pound of butter, although it is not unusual for less milk to be needed. There are, however, many farm dairies where for lack of keen work, more than 11 quarts are required, so that 11 is a fair average.

Ordinarily, the supplies of milk in a butter-making dairy, would be very much less in winter than in summer, but the form in which the returns are made out, allows of any adjustment being made when reckoning up an individual case, as, for instance, if the Depreciation Figures (Costs on p. 16) are taken as an item of cost, according to the outlay on plant, they may be followed by cost items from another column, according to the actual quantity likely to be dealt with in the winter season, and the returns may be reckoned out upon the same reduced basis.

Cheese-making.—In this case, we take Caerphilly cheese alone, as being the only cheese that is made to any considerable extent, all through the winter.

It is usually credited with yielding at the rate of about eleven (11 lbs.) of cheese to every 100 lbs. (or roughly 10 gallons) of milk, and for this reason, it would be equitable, to increase the summer price of Caerphilly cheese by a tenth, when striking an average with other varieties of cheese from a return of market prices. But this does not hold good for winter-made cheese, which is often scalded and drains more thoroughly, so that the yield is not more than 1 lb. to the gallon by the time the cheese is ready to be cut up for sale or consumption. This cheese is sold within four weeks of manufacture, and the monthly prices of cheese one month later than when the cheese is made—November to April—are taken as better representing the income from a gallon of milk, throughout the six months, October to March.

The winter prices of other varieties of cheese seen in the table are very largely from stocks of summer-made cheese.

For the calculation of summer returns from cheese-making, we take all varieties of cheese, other than Caerphilly, the prices taken to give the average, being those of two months later than the cheese prices shown for the month in which the cheese is made. Thus by taking June to November, as covering the time when the cheese from milk produced from April to September was sold, we put the cheese returns on the same economic basis as those of liquid milk and butter, so far as can be done in a review of this nature.

An average of "full supplies" is allowed for, throughout, in cheese-making, as when at times there are heavier supplies than usual, they can be accommodated at a little inconvenience, even if they exceed the margin of capacity allowed for in the plant.

TABLE V.

TABLE OF ESTIMATED GROSS RETURNS FROM THE DISPOSAL OF MILK.

Calculated on the daily supply at the average seasonal price.	Winter. 6 months = 183 days.	Summer. 6 months = 183 days.
Milk Selling, nine-tenths of 100 gals. $183 \times 90 = 16,470$ gals. Six-sevenths of this = 14,117.	£ s. d.	£ s. d.
Pay 95% = 13,411 at $1/5\frac{1}{2}$ per gal. ...	977 17 8	—
Pay the remainder 3,059 at 9d. per gal. ...	114 14 3	—
16,470	1,092 11 11	
Milk Selling, full supply 100 gals. $183 \times 100 = 18,300$ gals.		
Pay 13,411 + 13% = 15,194 at 11d. per gal.	—	696 7 10
Pay the remainder 3,106 at $7\frac{1}{2}$ d. per gal.	—	97 1 3
18,300		793 9 1
Milk Selling, nine-tenths of 50 gals. daily. $183 \times 45 = 7,875$ gals. Six-sevenths of this = 6,750.		
Pay 95% = 6,413 at $1/5\frac{1}{2}$ d. per gal....	467 12 4	—
Pay the remainder 1,462 at 9d. per gal....	54 16 6	—
7,875	522 8 10	
Milk Selling, full supply, 50 gals. $183 \times 50 = 9,150$.		
Pay 6,413 + 13% = 7,266 at 11d. per gal.	—	333 0 6
Pay the remainder 1,884 at $7\frac{1}{2}$ d. per gal.	—	58 17 6
9,150		391 18 0
Milk Selling, nine-tenths of 20 gals. $183 \times 18 = 3,294$. Six-sevenths of this = 2,824.		
Pay 95% = 2,683 at $1/5\frac{1}{2}$ d. per gal....	195 12 9	—
Pay the remainder 611 at 9d. per gal....	22 18 3	—
3,294	218 11 0	
Milk Selling, full supply, 20 gals. $183 \times 20 = 3,660$ gals.		
Pay 2,683 + 13% = 3,029 at 11d. per gal.	—	138 16 7
Pay the remainder 631 at $7\frac{1}{2}$ d. per gal.	—	19 14 5
3,660		158 11 0

TABLE V.—Continued.

TABLE OF ESTIMATED GROSS RETURNS FROM THE DISPOSAL OF MILK.

Calculated on the daily supply at the average seasonal price.	Winter. 6 months = 183 days.	Summer. 6 months = 183 days.
Buttermaking—full supplies.	£ s. d.	£ s. d.
183 × 50 = 9,150 gallons, or 3,327 lbs. Butter at 2/1 per lb. ...	346 11 3	—
and 3,327 lbs. Butter at 1/9½ per lb. ...	—	298 0 11
Plus bye-products at 3d. per lb. ...	41 11 9	41 11 9
	388 3 0	339 12 8
183 × 20 = 3,660 gallons, or 1,331 lbs. Butter at 2/1 per lb. ...	138 12 11	—
and 1,331 lbs. Butter at 1/9½ per lb. ...	—	119 4 9
plus bye-products at 3d. per lb. ...	16 12 9	16 12 9
	155 5 8	135 17 6
183 × 10 = 1,830 gallons, or 665½ lbs. Butter at 2/1 per lb. ...	69 6 6	—
and 665½ lbs. Butter at 1/9½ per lb. ...	—	59 12 4
plus bye-products at 3d. per lb. ...	8 6 4	8 6 4
	77 12 10	67 18 8
Cheese-making—full supplies.		
183 × 100 = 18,300 gallons, or 18,300 lbs. Cheese at 10d. per lb. ...	762 10 0	—
and 18,300 lbs. cheese at 11¾d ...	—	895 18 9
plus value of whey at ¾d. per lb. ...	57 3 9	57 3 9
	819 13 9	953 2 6
183 × 50 = 9,150 gallons, or 9,150 lbs. Cheese at 10d. per lb. ...	381 5 0	—
and 9,150 lbs. Cheese at 11¾d. per lb. ...	—	447 19 5
plus value of whey at ¾d. per lb. ...	28 11 11	28 11 11
	409 16 11	476 11 4
183 × 20 = 3,660 gallons, or 3,660 lbs. Cheese at 10d. per lb. ...	152 10 0	—
and 3,660 lbs. Cheese at 11¾d. per lb. ...	—	179 3 9
plus value of whey at ¾d. per lb. ...	11 8 9	11 8 9
	163 18 9	190 12 6

The Costs of Outfit and the work of Milk Disposal.—Where milk is already being produced upon a farm, the organisation and equipment for the purpose have no direct connection with, nor effect upon, a comparative review of what may be most profitably done with the milk, except as they affect the convenience of following out whatever method of disposal is current at the moment.

No account is, therefore, taken of the expenditure upon cowshed utensils, milking appliances, nor dairy herd recording outfits, desirable and profitable investments as they may be.

TABLE VI.

ESTIMATE OF THE COST OF PLANT, ETC., REQUIRED FOR A MILK-SELLING OUTFIT.

Items necessary to the work required.	Maximum daily Milk Supply.—Gallons.		
	100.	50.	20.
	£ s. d.	£ s. d.	£ s. d.
Milk float	40 0 0	35 0 0	32 10 0
Horse or pony	30 0 0	25 0 0	20 0 0
Harness and stable outfit ...	15 0 0	14 0 0	12 10 0
Total value of road outfit...	85 0 0	74 0 0	65 0 0
Cost of above per gallon ...	17/-	29/7	65/-
Milk refrigerator			
minimum cap- } 125 gals.	5 5 0	—	—
acity for cool- } 80 gals.	—	4 4 0	—
ing milk per } 40 gals.	—	—	3 12 0
hour			
Connecting up with water supply	0 10 0	0 8 0	0 5 0
Milk supply pan complete...	1 4 6	1 1 6	0 16 0
Wall brackets to hang cooler	1 0 0	0 19 0	0 17 0
Milk filter. (Strainer used with cotton wool mediums)	0 17 0	0 15 6	0 11 6
Gauged measuring pail ...	0 15 0	0 15 0	0 12 6
Railway churns for four days' supply, each 12 gals. capacity, gauged and brass labelled at 48s. each	79 4 0	40 16 0	19 4 0
Cost of utensils	88 15 6	48 19 4	25 18 0
Approx. cost per gallon ...	17/9	19/7	25/11
Total value of outfit ...	173 15 6	132 19 4	90 13 0
Approx. total cost per gallon	34/9	49/2	100/-
Cold water supply cistern additional if not already installed. Capacity must be 600, 300, 100 gallons respectively	8 10 0	5 0 0	2 10 0
Grand total of capital outlay	£182 5 6	£137 19 4	£93 8 0

TABLE VII.

ESTIMATE OF THE COST OF UTENSILS REQUIRED FOR A BUTTER-
MAKING OUTFIT.

Items necessary to the work.	Maximum daily Milk Supply.—Gallons.		
	50.	20.	10.
	£ s. d.	£ s. d.	£ s. d.
Cream separator, capacity per hour 80, 35 and 20 gallons	24 0 0	10 0 0	9 0 0
Milk strainer (filter type)...	0 15 6	0 11 6	0 9 0
Cream cans, cap. one week's cream	4 10 0	3 0 0	1 10 0
Butter churn, churning 3 to 4 days' cream	14 5 0	10 0 0	8 5 0
Butter-working table ...	9 0 0	5 0 0	2 0 0
Buckets, pails, brushes, &c.	2 0 0	1 10 0	1 5 0
Small utensils	1 5 0	0 17 6	0 15 0
Scales, weights and measures	3 0 0	3 0 0	3 0 0
Cost of above utensils ...	58 15 6	33 19 0	26 4 0
Cost of outlay per gallon ...	23/6	34/-	52/5
Items optional and desirable but not necessary :—			
Fat testing apparatus ...	6 15 0	5 0 0	5 0 0
Total cost of outfit... ..	65 10 6	38 19 0	31 4 0
Approximate cost of total outfit calculated upon the daily supply of milk to be dealt with per gallon	26½	39/-	62½

TABLE VIII.

COST OF PLANT AND UTENSILS IN CHEESE-MAKING OUTFIT.

Items. According to the Maximum Daily Milk Supply.	Gallons.		
	100.	50.	20.
	£ s. d.	£ s. d.	£ s. d.
Steam boiler, 1 H.P., 80 lbs. W.P.	33 10 0	—	—
Mountings and connections ...	10 0 0	—	—
"Copper," pan set in brickwork ...	—	5 0 0	2 0 0
Steam and hot-water outfit ...	43 10 0	5 0 0	2 0 0
Steam-heating cheese vat with accessories	26 5 0	23 0 0	—
Hot water jacketted vat	—	—	13 0 0
Milk strainer, extra to small vat ...	—	—	0 8 0
Acidimeter and hot iron	2 0 0	2 0 0	0 3 6
Rennet measure, thermometer, &c.	0 12 6	0 8 0	0 3 9
Cream skimmer	0 2 6	0 2 3	0 2 0
American curd knives	3 8 0	3 4 0	3 0 0
Curd cooler mounted on table frame	8 10 0	—	—
Shallow oak tub (cooler) with rack	—	1 0 0	0 7 0
Cross-vat curd mill... ..	5 11 6	3 0 0	—
Curd rake	0 10 0	0 6 0	—
Curd shovel or scoop	0 7 0	0 3 0	—
Cheese moulds, to hold 3 days' make, <i>i.e.</i> , 6 × 56 lbs. curd ...	15 0 0	—	—
Cheese moulds, to hold 3 days' make, <i>i.e.</i> , 12 × 14 lbs. curd ...	—	12 0 0	—
Cheese moulds, to hold 3 days' make, <i>i.e.</i> , 6 × 10 lbs. curd ...	—	—	7 10 0
Cheese turning stool, or block ...	1 15 0	1 5 0	0 10 0
Wooden cheese stands, or shelving	18 0 0	13 5 0	6 0 0
Cheese room stove	3 0 0	—	—
General accessories, weights and scales	8 10 0	7 10 0	4 0 0
Buckets, brushes, &c.	1 10 0	1 5 0	1 0 0
Floor squeegee	0 11 6	0 8 0	—
Wooden salt chest	1 0 0	0 15 0	—
Total cost	140 3 0	74 11 3	38 4 3
Approximate cost per gallon of milk	28/-	29/10	38/2

The Cost of Labour.—The expense of working any undertaking that does not take up the whole day, nor even one definite regular part of it, must always be problematical, in the absence of a time-sheet, on which a record of the actual time spent upon the work is shown.

For milk selling, we will assume that the distance from rail may economically be more with a larger quantity of milk, and must, from the same standpoint, be less where a smaller quantity is concerned.

As the time spent in getting milk to rail and washing cans, &c., cannot easily be less than one hour per day, or reasonably more than four, at the usual milk prices, we will take those times as the limits, and consider a midway figure of two and a-half hours as applying to the medium sized dairy. This estimate is to cover any special work attached to cooling the milk, which would mostly be attended to in the course of milking, by each milker in turn, or perhaps someone engaged in carrying the milk from the sheds, or someone working at the same time about the house.

In butter-making, one to two hours a day for separating, and two half-days per week for butter-making, seems to be a fair allowance in most cases. Differences are not shown in strict proportion to the quantity of milk, as additional size in the appliances for making butter economises time very effectively in this work.

In Cheese-making, which, although not always continuous work, takes up a large proportion of the day, we are on less questionable ground, the writer being privileged to use the actual records of three large dairies in the season under review, where the direct labour employed actually worked out through the season at $\frac{3}{4}$ d. per gallon of milk.

This rate is therefore accepted as applying to the 100 gallon supplies, and a penny per gallon is charged to the account of those dealing with the smaller quantities.

THE COST OF MATERIALS OF MANUFACTURE.

The detail of the cost of materials may be set out as follows:—

Milk Selling, at 100 gallons daily, for six months (183 days).

	£	s.	d.
Filter mediums	1	10	0
Fuel, at 2d. per 100	1	10	6
Lamp oil, 1d.	0	15	3
Renewal of brushes, &c.	0	11	3

£4 7 0

Butter-making, per 50 gallons, daily—

Filter mediums or strainer cloth	0	12	0
Fuel, light and machine oil, at 1d. per 100	0	7	8
Annatto colouring	0	3	0
Salt	0	3	6
Muslin	0	12	9
Grease-proof wrapping paper	0	11	2
Renewals, &c.	0	10	8

£3 0 0

<i>Cheese-making, at 100 gallons daily—</i>				£	s.	d.
Filter mediums and strainer cloth	...	...	...	1	0	0
Fuel, at 5½d. (no light)	...	...	...	4	4	0
Salt, at 3½ lbs. to 100 gallons	...	...	...	2	13	2
Annatto, at 2 ozs. per 100	...	...	...	2	5	10
Rennet, at 3½ ozs. per 100	...	...	...	2	10	0
Cloth for curd cooler and moulds	...	...	...	6	0	0
Cloth bandage	...	...	...	12	0	0
Renewals, &c.	...	...	...	0	17	0
				<hr/>		
				£31 10 0		

Reductions in Cost are made under the following circumstances, according to the quantity of milk under consideration :—

Reduce the filter mediums in proportion, but never to less than two per day.

Reduce fuel by $\frac{1}{3}$, but no lower.

Lamp oil at the same cost, except 10s. less in summer.

Renewals to be reduced only for the 20 and 10 gallons by half.

Allow no charge for butter colour in summer, nor for cheese colour (Caerphilly) in winter.

Salt, paper, rennet and cloth (except muslin) reduce in proportion, but charge nothing for cheese bandage in winter.

The factors for calculation are as follows :—

Materials used.	Measure of use.	Purchase Price.
Filter mediums ...	2 to 6 per day ...	3s. per 100.
Best dairy salt ...	{ 1½ per cent. to Butter 3 per cent. to Cheese ...	{ 1d. per lb.
Anatto colour ...	{ ½ oz. to 100 lbs. Butter 1 to 6 ozs. to 100 gallons Cheese ...	{ 3s. 6d. pint, 20s. per gallon.
Rennet ...	3 to 4 ozs. per 100 gallons...	2s. 6d. pint, 12s. 6d. per gallon.
Linen strainer and mould cloth.	10 square yards per month for 100 gallons is used repeatedly.	{ 2s. 6d. per sq. yd.
Calico bandage ...	2 sq. yards per 100 final ...	8d. to 10d. per yd.
Cheese grey (light weight).	1 yard to 56 gallons ...	4d. to 7d. per yd.
Butter muslin ...	According to use ...	7d. to 9d. per yd.
Greaseproof paper	1 lb. to 150 lbs. Butter ...	6d. per lb.
Fuel expenses ...	Taken in money value from	actual costings.

COMPARATIVE COST SHEETS IN TWO SIX MONTH PERIODS.

<i>Milk Selling—</i> Six months=183 days.	Winter.			Summer.		
Equipment, equal to gallons.	100	50	20	100	50	20
Depreciation of plant 5 %	£ s. d. 9 2 3	£ s. d. 6 18 0	£ s. d. 4 13 4	£ s. d. 9 2 3	£ s. d. 6 18 0	£ s. d. 4 13 4
Maintenance of horse or pony	20 0 0	18 0 0	16 0 0	17 0 0	15 0 0	13 0 0
Labour in work of delivery	26 0 0	16 15 0	6 10 0	26 0 0	16 15 0	6 10 0
Materials of manufac- ture	4 7 0	3 2 4	2 7 8	3 17 0	2 12 4	1 17 8
Total costs of disposal	59 9 3	44 15 4	29 11 0	55 19 3	41 5 4	26 1 0
Gross returns— Nine-tenths	1,092 11 11	522 8 10	218 11 0	—	—	—
Maximum	—	—	—	793 9 1	391 18 0	158 11 0
Less costs	59 9 3	44 15 4	29 11 0	55 19 3	41 5 4	26 1 0
Net Returns, Milk Selling	1,033 2 8	477 13 6	189 0 0	737 9 10	350 12 8	132 10 0
Equal to per gallon ...	15d.	14d.	13·77d.	9·5d.	9·2d.	8·7d.
<i>Butter-making—</i> Equipment in gallons	50	20	10	50	20	10
Depreciation 5 % ...	3 5 6	1 18 11	1 11 3	3 5 6	1 18 11	1 11 3
Labour	12 0 0	10 0 0	8 0 0	12 0 0	10 0 0	8 0 0
Materials (max.) ...	3 0 0	2 0 0	1 16 5	2 12 0	1 13 9	1 10 10
Total costs	18 5 6	13 18 11	11 7 8	17 17 6	13 12 8	11 2 1
Gross returns	388 3 0	155 5 8	77 12 10	339 12 8	135 17 6	67 18 8
Less costs	18 5 6	13 18 11	11 7 8	17 17 6	13 12 8	11 12 1
Net returns, Butter- making	369 17 6	141 6 9	66 5 2	321 15 2	122 4 10	56 16 7
Equal to per gallon ...	9·7d.	9·26d.	8·7d.	8·4d.	8d.	7·45d.
<i>Cheese-making—</i> Equipment in gallons	100	50	20	100	50	20
Depreciation 5 % ...	7 0 1	3 14 7	1 18 3	7 0 1	3 14 7	1 18 3
Labour at 3d. and 1d.	57 3 9	38 2 6	15 5 0	57 3 9	38 2 6	15 5 0
Materials (max.) ...	17 4 2	9 15 1	5 19 8	31 10 0	16 18 0	9 11 8
Total costs	81 8 0	51 12 2	23 2 11	95 13 10	58 15 1	26 14 11
Gross returns	819 13 9	409 16 11	163 18 9	953 2 6	476 11 4	190 12 6
Less costs	81 8 0	51 12 2	23 2 11	95 13 10	58 15 1	26 14 11
Net returns, cheese- making	738 5 9	358 4 9	140 15 10	857 8 8	417 16 3	163 17 7
Equal to per gallon ...	9·68d.	9·4d.	9·23d.	11·24d.	10·96d.	10·74d.

To explain any apparent discrepancy in the figures from column to column, see the Detail of Reductions in cost of Materials.

FINAL COMPARATIVE TABLE SHOWING THE NET AVERAGE RETURNS
IN THE DISPOSAL OF MILK PER IMPERIAL GALLON.

Average daily quantity for which the Dairy is equipped, and net returns in pence per gallon.	Winter.			Summer.		
	Milk selling.	Butter- making.	Cheese- making.	Milk selling.	Butter- making.	Cheese- making.
100 gallons per day	15·0	—	9·68	9·5	—	11·24
50 gallons per day	14·0	9·7	9·4	9·2	8·4	10·96
20 gallons per day	13·77	9·26	9·23	8·7	8·0	10·74
10 gallons per day	—	8·7	—	—	7·45	—

	Milkselling.		Buttermaking.		Cheesemaking.	
	Winter.	Summer.	Winter.	Summer	Winter	Summer.
100 gallons per day	15·0	9·5	—	—	9·68	11·24
50 gallons per day	14·0	9·2	9·7	8·4	9·4	10·96
20 gallons per day	13·77	8·7	9·26	8·0	9·23	10·74
10 gallons per day	—	—	8·7	7·45	—	—

REFERENCES AND ACKNOWLEDGMENTS.

1. Price of Contract Milk.—Contract form approved by the N.F.U. and the National Association of Creamery Proprietors and Wholesale Dairymen Incorporated September, 1923.
2. Price of Manufacturing Milk.—“The Milk Industry.”
3. Prices of Butter.—The Ministry of Agriculture and Fisheries “Agricultural Market Report” and the weekly farming papers.
4. Prices of Cheese.—Cheddar, Cheshire and Caerphilly.—Ministry of Agriculture and Fisheries “Report” averaged only from the market prices in districts where the cheeses are made (*i.e.*, not London or Liverpool).

Derby and Leicester.—By the favour of makers and factors in the two Counties.

Lancashire.—Reports of Preston Market and of private sales, by the courtesy of a cheese-making farmer.

Wensleydale.—By favour of makers in Yorkshire.

THE PRODUCTION OF GAS FROM THE MANURE HEAP.

By VISCOUNT ELVEDEN, C.B., C.M.G., M.P.

I SHOULD not have intruded on your space with a description of the experiments which I have been carrying out, had I not been asked to do so by the Committee of the British Dairy Farmers' Association, who thought it might interest a number of farmers to know how far the experiments have, up to the present, been successful.

I cannot at the moment answer the main question, namely whether I can recommend a system of treating the manure from cow sheds to a practical farmer, as my experiments are not yet completed from the practical point of view.

For a number of years I have been carrying on laboratory experiments which arose out of the work done by Mr. E. H. Richards, of Rothamsted, on the storing and keeping of farmyard manure, the object of my investigations being to see under what conditions manure will produce an inflammable gas, and the nature of that gas. I am now able to say with certainty that farmyard manure at a certain stage of its decomposition will produce a gas, the composition of which is as follows:—

Two-thirds Methane or Marsh Gas. Chemical formula CH_4 .

One-third Carbonic Acid Gas, or Carbon di Oxide. Chemical formula CO_2 .

There are occasionally traces of other gases, such as hydrogen, but the particular fermentation which I am describing seems to be mainly methane and carbonic acid gas, and the resulting mixture has properties very similar to the ordinary coal gas supplied in towns, since methane is inflammable and carbon dioxide non-inflammable. When burnt with an open flame it is not very luminous, but if burnt with an incandescent gas mantle it gives a light similar to ordinary gas. I have successfully run an ordinary type of gas engine with it.

From this gas it is possible to extract the CO_2 with the result that the residue, being nearly pure methane, will give a more intense heat than ordinary gas, and be more powerful in a gas engine.

From my small scale experiments I came to the conclusion that a load of farmyard manure in decomposition would give 1,000 cubic feet or thereabouts of the mixed gas, but that to produce this the manure must be kept at a temperature approaching, if not exceeding, blood heat.

In order to obtain this gas it is essential that the manure be exposed to the air for at least ten days before it is put into an enclosed vessel, also it should have some manure with it that has already given off gas. This is not so difficult to come by as it might seem, and is essential. The gas takes a certain length of time to come off, a period of about five weeks, although some will continue to come off for a much longer time, but in smaller and smaller quantities. In fact, gas continues to come off for many years and I have kept a sample of straw for nearly seven years, and there is still a trace of gas coming from it. That particular experiment was not done with farmyard manure, but with straw, the resulting gas, however, is the same, as indeed with all vegetable refuse decomposed in the right manner.

It may seem easy enough to keep farmyard manure in an enclosed, gas-tight receptacle, but in order to deal with a herd of, say, 20 to 30 cows, the receptacle must be of a capacity of some 20,000 to 30,000 cubic feet, which may make the process quite impossible for the ordinary farmer. At the same time, I think it is essential that these experiments should be persevered with, as from my investigations I am convinced that the production of this gas is of value in more ways than one. The manure, when it comes out of the receptacle, is of the kind which farmers call "short" or decomposed manure, and has certainly lost none of its fertilising power.

I have tested practically every one of my hundreds of small scale experiments, by putting the resulting manure on boxes of soil in which I grow mustard plants, against similar boxes of soil which have not been manured. I have also tested it against boxes treated with ordinary farmyard manure. If the manure from the farmyard be fresh or long manure, the manure which has been in the incubator and has given off gas grows a better crop. If the manure direct from the farmyard be short manure, the crop grown is not appreciably better or worse, but it should be pointed out that it is difficult to get an exact sample of manure out of an ordinary manure heap with any certainty that it has originally been of the same weight as the sample put into a bottle in an incubator. I have had made three large steel tanks, rather like shortened silos, each with a capacity of 1,000 cubic feet, and I am getting a very considerable amount of gas from these, and also a great deal of practical evidence on certain points.

As stated above, it appears that, except in very hot weather, it is necessary to heat the manure artificially. This I do with heat generated in a small steam boiler, and I am getting, as I expected, about 1,000 cubic feet of gas for every load of manure put into my receptacles.

I usually call these receptacles "Digesters" for the sake of giving them some special name.

A week or two ago I made some calculations as to the amount of heat consumed, and found that the amount of gas given off from these

digesters during that week would have produced in a gas engine rather more horse-power than the amount of coke which I had burnt under the boiler during the same period.

I must emphasize that this statement will probably have to be modified very considerably, as the results should be greatly improved when my plant is working to its full capacity, which it is not yet doing. Nor have I run the engine with this gas for many hours consecutively, nor with gas in a purified state. But it can be taken as a rough indication that possibly the amount of fuel required to produce gas rapidly from the fermenting manure will be not much less in value than the gas given off by its means.

I have not yet actually manured an acre of land against another acre of land, but I am working on the information that has been given me by the scientists, and on deductions I have made from my small scale experiments, by which I am convinced that the resulting manure will have a greater proportion of available nitrogen, and will, therefore, be of greater value to a crop that is put in immediately after the land has been dressed with it, than if the manure had had no previous treatment. I think it is quite worth while bearing in mind that the scientists assert that after my process, all the nitrogen which was in the manure originally will be in the well-rotted "short" manure coming out of the digester, whereas manure left in a rough heap or manure clamp, exposed to the weather, loses a very considerable proportion of available nitrogen.

My experience in carrying out experiments of this kind over a number of years, leads me to the conclusion that it will still be some years yet before I can satisfactorily answer the question which I put at the beginning of this statement. At the same time it may be of interest to those who watch the progress of such investigations to realize that there is a source of potential energy in the shape of inflammable gas being given off every day from manure heaps all over the land, and that this can be turned to the help of human activity when we can find a method of doing it economically.

Whether we succeed in devising a method which may be generally applied, lies in the future, and it may appear at first sight that my experiments have led to no practical conclusion, but I think anyone who takes this point of view should bear in mind the fact that I have, so far, certainly proved that, given the proper apparatus and a certain amount of manual labour, a farmer can produce inflammable gas on his farm. This gas is a most useful form of energy since it can be used directly for giving light with the aid of an ordinary gas mantle, and can also be used for giving power in a gas engine, while my experiments prove even at the present stage that such power is produced economically. It can further be used for more rapid generation of heat, a very great advantage to the cook in hot summer weather. Gas produced from farmyard manure is ready at any time for all these purposes.

Everyone appreciates the usefulness of a gas-cooking outfit, which, within a few seconds of applying the match, heats the kitchen range for the preparation of food, either for sick animals or for the household. To country dwellers, however, such benefits have not hitherto been available.

My own gardener has actually used this gas for many months in his house, and has greatly appreciated its advantages over any other form of fuel.

With the help of gas the farmer can run his machinery for chaff cutting and pulping by simply turning a handle, and no question would ever arise as to awaiting the delivery of petrol or the holding up of the supply owing to a strike. The dairy farmer who employs a steam boiler for the proper sterilisation of his utensils should be able to combine the work of the boiler in this direction with the work of providing the necessary heat for generating gas from manure.

I am, therefore, able to claim, even at the stage which I have reached with my experiments, that it is possible to obtain from farmyard manure and other decomposing vegetable material, a by-product of the greatest value to the farming community as a whole.

SOME ASPECTS OF DANISH AGRICULTURE.

By R. WEATHERALL.

THE last few years have given unique opportunities for suggestions to remedy the serious disadvantages under which English farmers have been working. Of such suggested remedies the great majority have their origin in Denmark, in whose favour comparisons have been made as regards the high uniform quality of the produce, the large output per acre of land, and the efficient system of distribution through organised co-operation.

It occurred to me that too much is heard about the *factory* side of Danish agriculture and too little is known about the farmer himself, the special circumstances under which he farms, and the profits he is making at the present time. I decided, therefore, if possible, to get in touch with the farmer himself; and the account which follows is the result of a visit which I made to Denmark during August and early September of last year. The greater part of the time was spent on one particular farm, during which I had opportunities for seeing a good deal of the practical side of Danish farming and for taking a hand in it myself. Owing to the shortness of my stay in Denmark it is quite impossible to give an accurate and reliable description of the special systems practised by the Danes; my attempt is merely to give a general idea of a very complicated subject; and the figures which are quoted should be used more in a relative sense than as a basis for exact comparison.

Typical farming conditions in Denmark have been described so frequently that it is quite unnecessary to enter into any lengthy account here. There are, however, certain major characteristics which deserve more than a passing mention since each in turn can be used to explain a good deal. The country is really quite small, only about half as big as Scotland or Ireland. It has no great reserve of mineral wealth, the population is almost entirely agricultural, and soil and climatic conditions differ very little in any part of the country. The greater part of the land is occupied by small farms, where a uniform system of farming is practised, closely associated with co-operative factories through which butter and bacon are produced for export.

The lack of mineral wealth has saved Denmark from the evils of industrialism and has compelled her to seek markets abroad where she can exchange the products of the land for such articles as coal, machinery, and textiles. Denmark is driven therefore to export in proportion to the amount she buys abroad, and from sheer necessity she must market her produce in quantity sufficient to bring back

what she requires. This helps to explain the quantity and relative cheapness of Danish exports to this country. It is interesting to note that the rate of exchange with England has been moving slowly against Denmark ever since the War: a tendency which has helped Danish goods to find a market in open competition with our own. In addition, Denmark not only lacks coal and mineral ores, but has no sources of water power of any magnitude and is dependent for power almost entirely upon English coal.

Through the absence of closely settled industrial areas, Denmark possesses a relatively scanty population, the greater part of which is closely associated with the land. Over half of the people are directly engaged in tilling the soil, in the growing of crops, and rearing of stock; of the rest, many are employed in the different factories which handle the farmers' produce or supply them with equipment to carry on their work, and others are engaged on the railways, and in the export associations, in the distribution of agricultural produce. This means that the whole outlook of the country is agricultural. The influence of the land dominates the Press, it colours the whole educational system, and it is the moving force in politics. Numerically, the farmers are stronger than any other group of people in the country, and through co-operation they are sufficiently well organised to make their demands felt. The result is that farmers as a class are more highly respected than any other men in the country, and all possible steps are taken to meet their requirements. In addition, there, in the struggle between rural and urban standards the country usually wins, the rural worker is content with his lot and finds little to attract him into the towns. The country has never been exploited to supply workers for the towns, the best workmen have always remained on the land, and the present prosperity of Danish agriculture is partly due to the fact that nearly all the best men in the country are farmers, who bring the whole of their abilities to bear upon the land they cultivate. In England, the wider scope of industry and trade draws a large proportion of the ablest farmer's sons away from the land into the towns.

The soil of Denmark is nearly everywhere of a light sandy nature. The western parts of the country are relatively poor and infertile, but further inland, and towards the east, one finds land of excellent quality. Tillage operations are comparatively easy, and farmers are not faced with the same difficulties in preparing seedbeds as many English farmers have to meet on heavier soils.

A good deal of the land requires no artificial drainage system; but in valley bottoms it is a common sight to see waterlogged soil and piles of peat cut for drying. Where necessary, Danish farmers are quite ready to go to the expense of draining their own land thoroughly. As the soil is almost everywhere of a sandy nature, it usually will respond to dressings of lime, which are promptly applied where necessary, but, as in some counties of England, owing to the energy of previous generations of farmers in many parts, the soil already contains reserves of lime sufficient to carry it on for the next few years.

This light soil responds readily to the heavy dressings of artificial manures which Danish farmers apply to their crops.

The climate is distinctly cooler than in England. During the winter months the weather is so trying and the land is so exposed that all stock must be safely housed in the farm buildings. Winters are relatively long and the period of winter feeding lasts well towards the end of May. During the winter, I am told, very little work is done on the land and work for spring crops begins later than in this country. The summer is cooler than in England and the air is always more humid. Because of this, crops on the light soils would be considered very satisfactory on ordinary English farms. Root crops like turnips and swedes grow very well; and green crops for soiling purposes give good results and are always reliable. I gather that owing to the humidity of the air haymaking and harvesting are always very trying times. Most Danes make hay on the Scottish plan by making large cocks, holding about a wagon load, which are left to dry for several weeks. It is quite common to see heaps of sheaves, of a similar size, left to dry in the same way. The moist climate encourages "blight" on potatoes to a greater extent than in England, and nearly every farmer sprays his potato crop with copper sulphate preparations as a matter of routine. Although the climate is more humid than in England, the rainfall, if perhaps better distributed through the year, appears to be much the same as in the Midlands.

The typical Danish farm is a small holding. Actual sizes range between 5 and 150 acres, many of them running to about 50 acres. Before dealing with these in more detail, one must mention that several large farms, running up to 3,000 acres, occur in different parts of the country. These farms are run on exactly the same lines as the small holdings and produce the same kind of things, but are worked by hired labour. Such farms approximate more nearly to "factory" farms than any others I have so far met with. The half dozen or so that I saw impressed me greatly by their aspect of general efficiency, the high quality of the crops and stock, and the extent to which the farmers had gone in the use of good modern machinery. They appeared to produce just as much per acre as the small holdings, but they are regarded with disfavour by the ordinary farmer, and through the Government scheme for small holdings their number is being slowly reduced.

The small holdings themselves are nearly all owned by the men who till the soil. It is true that the great majority of the farms also carry loans from banks or in the form of mortgages, but the farmers themselves feel that they do really own the land, and they have a legitimate pride in doing so. Land values appear to be about the same as for good land in England, which is partly accounted for by the good quality of the farm buildings and the keen demand for farms. It appears to be just as difficult for a farmer's son without capital to get hold of a farm in Denmark as it is in England, but as most farmers already possess a certain amount of capital the problem helps

to solve itself. When farmers retire, or otherwise sell their farms, it is a common practice to lend a considerable amount of the purchase price to the new owner in the form of a loan at current market rates. Credit can also be obtained through the co-operative banks, but since the War the would-be borrower has been compelled to give very satisfactory assurances of his ability before he has been assisted in this way. It seems to me probable that a good deal that we have heard about easy credit in Denmark is really an outcome of the War period, when the banks were very willing to lend money on very slender security. There as in England all new owners have been very severely hit who purchased farms at the height of the post-War boom.

As a general rule, farm buildings are better and more substantial in Denmark than here at home. Owing to the severity of the winter months the stock require better protection than is afforded by open yards. The usual plan is to house all the stock on the ground floor of the different buildings and use the floor above for holding all the hay, straw, and grain. This reduces the labour of winter feeding to a minimum since a good deal can be fed directly to the stock through holes in the floor above. The trouble of stowing all the hay and straw on lofts close under the roof appears to me to be considerable, and to have little to recommend it beyond the economy of feeding I have mentioned. Because of this system of storing straw, all Danish farms have a much neater appearance than English farms and they are never surrounded by a mass of litter or a sea of mud.

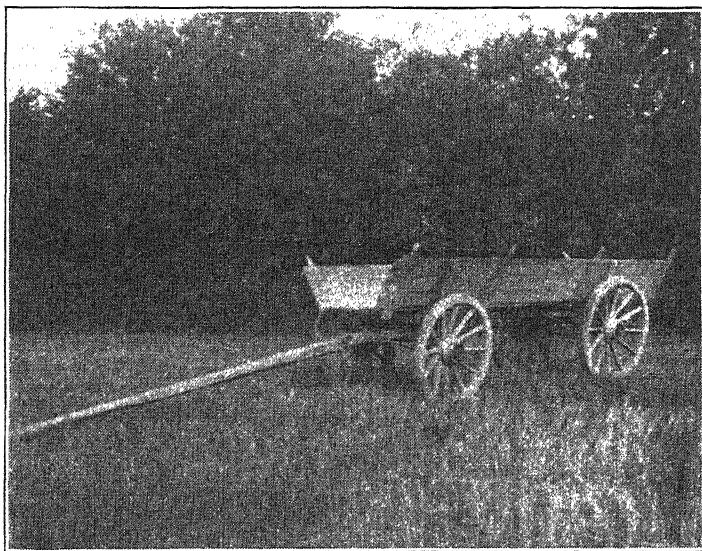
It is evident that Danish farmers spend considerable sums on the upkeep of their farm buildings, which everywhere are kept in the best state of repair. I was greatly struck with the extent to which they are repairing and rebuilding at the present time; so that frequently one meets new erections which have evidently cost considerable sums. The farmers themselves show great ingenuity in the use of builders' tools and materials, and they handle concrete with great familiarity. In this way they fill in spare time and reduce costs proportionally. All the cow stalls I saw were properly erected on modern lines to keep the cows as clean as possible, and on some farms the same plan is being tried for horses as well. The farmers at once carry out such minor improvements as this as soon as ever they see the need for them.

Farm equipment runs on much the same lines as in England. The majority of the farms are now filled up with supplies of electricity for light, power, and telephones. After seeing even the smallest holdings fitted with telephones, and electric light everywhere, as well as electric power for all kinds of work, one is amazed at our backwardness in England. The surprise is greater because all the electricity is generated from English coal except for small amounts brought by cable from Norway and Sweden, and there are very few industrial establishments using large quantities of electricity which would reduce the cost of distribution to rural areas. On the particular farm where I was staying, dynamos did all the work in cutting chaff, pulping roots,

grinding corn, sawing, pumping water (all the buildings were supplied from a central tank), and threshing; there was even a special small dynamo to drive the grindstone.

A few farms are still without electricity for power purposes although they usually have electric light and telephones. On such farms motor engines do all the work elsewhere done by electricity. These engines are well cared for and appeared to be of greater horse power than those found on farms of a similar size in England.

Of the ordinary farming equipment little need be said. The outdoor machinery is very similar to that in England. All the ploughs appear to be of the "digger" type with short breasts, but in the light



A TYPICAL FARM WAGON.

soil they do their work well at all times of the year. These ploughs are of interest as having only one wheel, which runs on the land immediately beneath the beam. All carting is done in wagons usually fitted with a pole for two horses. These wagons are of very simple construction and must be very cheap indeed. They appear quite capable of doing all the necessary work on the farm and can easily be fitted to hold manure or to carry a very respectable load of grain. Compared with cumbersome English carts and wagons by their lightness and cheapness they have much to recommend them. The photograph gives one an idea of plan on which these wagons are built. Mention of wagons makes this a suitable place to speak of harness, which is much the same as in Canada. In English eyes it appears very

much of a "bootlace" kind and not at all reliable. Actually it is quite strong enough for all farm purposes with the horses one finds in Denmark, but Shires would require something stronger. Shoulder pads are nearly always used instead of collars, and although I looked carefully for signs of sore shoulders I could not find a trace. Owing to the use of pole wagons one single set of harness is sufficient for each horse; there are no expensive collars, or chain sets. The hitch is almost invariably a noose of rope which fits in a groove of the heel tree. The heel tree is therefore only a straight piece of wood with no iron hooks at the end.

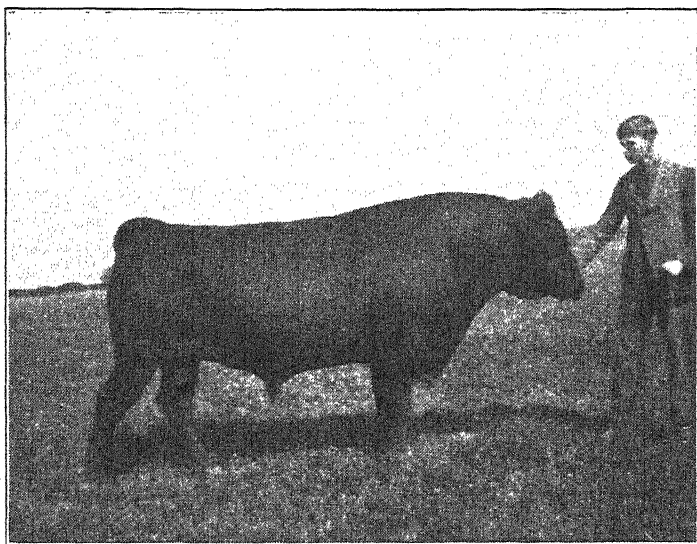
Harvesting and haymaking machinery is of the usual American brands, but only the smaller sizes are used. I saw several drills which are rather novel. They were of the "steerage" type, fitted with a forecarriage from which a long steering-handle reached to the back of the machine. In this way the advantage of a "steerage" drill is combined with the labour-saving advantages of the modern makes used in England. It causes me some surprise that English makers have never, as far as I am aware, advocated this simple device. For lifting swedes in the autumn groups of farmers band together on co-operative lines and use a root-lifting machine, after the fashion of a sugar-beet lifter. Although I did not see one of these machines I am told that they save a considerable amount of labour with swedes, but that they cannot be used with mangolds owing to their irregular growth and to the damage they suffer through bruises.

Indoor machinery is usually similar to that at home. Chaff-cutters and root-pulpers call for no special notice. All the bigger farmers (100 acres or so) have gone to the expense of installing their own stone milling-sets by which they grind all their own grain for stock food. I was greatly surprised to find that nearly all farmers have their own threshing-sets. These are quite small, and from my own experience they work very well. The cost of such a machine appears to be about £70. Through the use of such machines, driven by electricity or motor power, a farmer can fill in slack days in winter threshing his corn. It is evident, although the machines are expensive, that this practice suits the particular Danish system very well.

Of stock I am not at all competent to speak with any authority. The cattle nearly all belong to the red Funen or the black-and-white Jutland breeds, although a few Shorthorns are met with as well. The Danish breeds struck me as having several points in common in that both are dairy breeds, of similar size and configuration, and both are well suited to the special requirements of the Danish farmer. The red Funen breed is certainly more common and popular. It is a medium sized, dark red breed. The black-and-white cattle are evidently closely related to the Holsteins found further south along the same coast. All cattle appeared to be not quite so "pretty" as English breeders care to see them, rather coarse in the head, shoulder, and hindquarters, and with udders which are not very shapely. The

milk yields are not particularly impressive but would compare favourably with yields in ordinary commercial herds.

The fat content of the milk is moderately high. The custom is to retain cows in the herd rather longer than in England. Bull calves are sent along directly to the bacon factories for conversion into veal for export to England, unless they come from really good cows. Female calves are retained in the herd. The young calves spend nearly all their lives tied up in stall or tethered in fields. They are fed in the usual way with meals, hay and green foods, but receive little milk of any kind. I met with the practice in Denmark of allowing a newly



PEDIGREE BULL—RED FUNEN BREED. Owned by Tune Agricultural College.

This bull has won several prizes at good Shows.

calved cow to drink the colstrum or beastings first drawn from her udder, but I was quite unable to obtain any reason for it.

The feeding of cows is mainly on a modified soiling system. During the summer they are fed on a succession of green foods such as clover and temporary grass, lucerne, and mixtures of oats, peas and barley. During this time they spend part of the time tethered in the fields and part in the stalls; depending on the particular crop being fed. A Dane does not object to carting the whole of the greenstuff to the cow in the height of the summer if circumstances demand such a step. As autumn comes along turnips are carted off directly to the cows, and later on swedes and mangolds. I myself saw turnips and swedes being fed to cows in the first week of September owing

to the supply of green crops running out, and except for a little more lucerne there was no other green crop to fall back upon later in the year. During the winter period, which lasts well into May, excessive quantities of roots are fed; about a hundredweight a day of swedes or mangolds. For this purpose large acreages of roots are grown on all farms. Other winter feeds are hay, from temporary grass, and some straw. The ration of oil cake given at all times of the year to the cows which require it is of interest because it is usually supplied by a co-operative association which guarantees a particular balanced mixture. One of these mixtures is given as a specimen:—

20	per cent.	Cotton cake, Texas.
30	„	Ground nut cake.
20	„	Sunflower cake.
10	„	Sesame cake.
10	„	Soya cake.
10	„	Coconut cake.

There seems plenty of scope for English dealers in oil cakes to build up demands for similar mixtures to suit particular types of stock.

Apart from the sale of young bull calves to the bacon factories there is no great market for cattle. A few cows and heifers change hands at prices which appear similar to those paid for similar stock in England. Bullocks and fat cows are almost unknown. When a cow is considered no longer profitable in the herd, little attempt is made to fatten her, and she is sold to local butchers and dealers and is killed for consumption in Denmark or Germany. At the weekly markets auctions are rare and nearly all transactions are done by individual bargaining.

The Danes appear to be fully aware of the advantages to be obtained from the use of good stock for breeding purposes. Many farmers now belong to milk-recording associations run on co-operative lines. The common practice is for the recorder alone to be responsible for all the records. At intervals of from a fortnight to three weeks he visits the farm, weighs the yield of each cow's milk morning and evening, and analyses representative samples of milk from each cow for fat content. In this way, attention is brought to bear on the quality as well as the quantity of milk. The value of the fat content is still further impressed upon the farmer because the local creamery pays for the milk on its percentage of fat and each week he gets a return stating what the average of his herd has been for that period. It seemed to me that such records of yield and fat content, taken not more frequently than once a fortnight, cannot be very reliable, but the Danes appear well satisfied with the system.

The ordinary peasant farmer cannot afford to own a bull of his own. A number of them band together to form a co-operative association, buy a bull from a good recorded cow and allow one of their members to look after it for them. In this way the use of good bulls is placed within the reach of all farmers. I am told that prices for good bulls run very high, but I could obtain no reliable figures. The

bull shown in the photograph is of the Red Funen breed and was a prizewinner at some of the biggest shows in the country. It is the property of the agricultural college at Tune near Copenhagen.

There are two breeds of horses in Denmark. The common Jutland breed is very like the Suffolk, in colour and conformity, but perhaps is rather smaller. The horses work well and are strong enough for all the work they have to do. Another breed is called the Frederiksborg horse, of which a photograph is shown. This horse is taller and



FREDERIKSBORG HORSES; note the harness.

lighter than the other breed. It is considerably more active and alert, and from my own experience it works well and is stronger than it appears to be. The horses are fed after the same manner as in England, except that they remain in the stable for the greater part of the year. Danes have no qualms about trotting horses when going to and from work and they lose little time unnecessarily between jobs.

Many farms are fitted with a feeding device for horses, which is rather ingenious. Four hoppers placed above the horse's head, filled

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20	„	Sunflower cake.
10	„	Sesame cake.
10	„	Soya cake.
10	„	Coconut cake.

There seems plenty of scope for English dealers in oil cakes to build up demands for similar mixtures to suit particular types of stock.

Apart from the sale of young bull calves to the bacon factories there is no great market for cattle. A few cows and heifers change hands at prices which appear similar to those paid for similar stock in England. Bullocks and fat cows are almost unknown. When a cow is considered no longer profitable in the herd, little attempt is made to fatten her, and she is sold to local butchers and dealers and is killed for consumption in Denmark or Germany. At the weekly markets auctions are rare and nearly all transactions are done by individual bargaining.

The Danes appear to be fully aware of the advantages to be obtained from the use of good stock for breeding purposes. Many farmers now belong to milk-recording associations run on co-operative lines. The common practice is for the recorder alone to be responsible for all the records. At intervals of from a fortnight to three weeks he visits the farm, weighs the yield of each cow's milk morning and evening, and analyses representative samples of milk from each cow for fat content. In this way, attention is brought to bear on the quality as well as the quantity of milk. The value of the fat content is still further impressed upon the farmer because the local creamery pays for the milk on its percentage of fat and each week he gets a return stating what the average of his herd has been for that period. It seemed to me that such records of yield and fat content, taken not more frequently than once a fortnight, cannot be very reliable, but the Danes appear well satisfied with the system.

The ordinary peasant farmer cannot afford to own a bull of his own. A number of them band together to form a co-operative association, buy a bull from a good recorded cow and allow one of their members to look after it for them. In this way the use of good bulls is placed within the reach of all farmers. I am told that prices for good bulls rule very high, but I could obtain no reliable figures. The

bull shown in the photograph is of the Red Funen breed and was a prizewinner at some of the biggest shows in the country. It is the property of the agricultural college at Tune near Copenhagen.

There are two breeds of horses in Denmark. The common Jutland breed is very like the Suffolk, in colour and conformity, but perhaps is rather smaller. The horses work well and are strong enough for all the work they have to do. Another breed is called the Frederiksborg horse, of which a photograph is shown. This horse is taller and



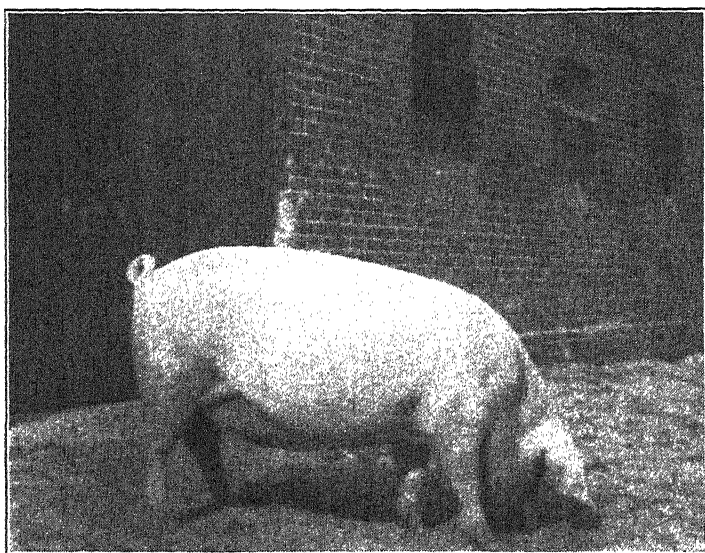
FREDERIKSBORG HORSES; note the harness.

lighter than the other breed. It is considerably more active and alert, and from my own experience it works well and is stronger than it appears to be. The horses are fed after the same manner as in England, except that they remain in the stable for the greater part of the year. Danes have no qualms about trotting horses when going to and from work and they lose little time unnecessarily between jobs.

Many farms are fitted with a feeding device for horses, which is rather ingenious. Four hoppers placed above the horse's head, filled

with corn and chaff from the loft above, are worked by clockwork, and open at intervals of about 20 minutes after a certain fixed time in the morning. In this way a horse requires little extra care when the attendant appears, and is soon ready for work. This device is simple and would be very cheap except for the present patent rights. It definitely saves labour at one of the most important stages of the day, and in Denmark is deservedly popular.

So much has already been written about Danish pigs that it is very difficult to decide what to include or omit. The native breed is the Landrace; but Large Whites are fairly common, and it is agreed by all that a cross between the two gives the best bacon pig. The Landrace,



A FIRST-CLASS LANDRACE PIG.

although admittedly not ideal, is an excellent pig for the bacon factory. It matures early, is light in the shoulder, good along the back and sides, and has good hams. Nearly all the pigs are white, but coloured ones are met with from time to time.

It is as well to emphasize the point that in Denmark there is no demand for pigs for pork to upset the demand for bacon pigs. The bacon factory will only take pigs of the right size, and will not touch old sows and boars, which are taken up by local butchers or dealers, which send them to Germany. The Dane is paid for his pigs on the dead carcase weight, which in the two factories I am familiar with had to be between 132 and 154 pounds. The particular pig to suit the bacon factory is now being produced by the million. Throughout

the country they are ideally uniform in breed, age, size, feeding, and conformity. This is well shown by the fact that at the present time bacon factories only pay about 3½d. per stone dead weight more for first class animals than for these which are considered only third rate. Percentage figures therefore of the pigs in each class in England and Denmark are not reliable on a basis of comparison, for nearly all Danish pigs would be considered first class in England. All farmers have a very good idea of the ideal requirements of a bacon pig and put them into practice. I have always felt quite confident that English farmers, if confronted with a similar specialized demand for a single type of animal, would soon meet that demand effectively if they found it worth their while. As it is there is little beyond frequent admonitions to make that demand real.

During the last summer Danish farmers were getting about 11s. 4d. per stone dead weight for their best pigs.

Pigs, except breeding sows and young ones a few weeks old, are all kept in pens in special constructed pig houses which are part of the main farm buildings. Such houses are well built, are usually well lighted and ventilated, and have their floors properly levelled. The floors are usually of concrete. The Danes crowd their pigs together much more than we do in England: it is no uncommon sight to see 20 pigs all crowded together in one small pen where there is hardly room to lie down. As a Dane said to me, "I think they are happier and do better when crowded together." Except for tuberculosis these pigs are wonderfully free from disease.

All pigs are fed mainly on home-grown food, such as barley and rye; with some wheat, oats, and imported maize. Mixtures of feeds are all ground together. In addition the pigs receive nearly all the skim milk produced on the farm. No great attempt is made to use accurately-balanced rations, but such a mixture balances itself fairly well. Nearly all the feeding is wet. The pigs do exceedingly well on these feeds, probably because milk contains the best protein known for growth. Young pigs grow very quickly and are ready for weaning at six to eight weeks—a Dane thinking it waste of time to keep them longer on the sow.

There is an active market in young pigs, and prices were higher there than in England during the summer. Near Aarhus all young pigs are sold in strong crates very much after the way in which we handle poultry.

The poultry I saw would not have excited an English fancier and little attention seemed to be given to them. There is, however, a very efficient egg-collecting and co-operative export association.

Sheep are very rare. Occasionally one meets one solitary animal tethered on a patch of land all to itself. The few I saw appeared of good quality.

Turning to the outdoor work on the farm one is at once struck by the almost complete absence of grass. Crops are grown almost entirely from the standpoint of stock food, and little is sold off the farm.

The very long winter and the excessive amount of roots fed to cows make root crops very important indeed. Excellent crops of mangolds and swedes (there called kohl rabi) are grown, and turnips to a smaller extent. The cool climate keeps these crops growing all through the summer, and yields are heavy. For summer feed for stock the farmer makes use of temporary grass, lucerne, and mixtures of oats, peas, and barley for soiling purposes. Silos are very rare and no fancy catch cropping schemes are indulged in.

Temporary mixtures of clovers and grasses do exceedingly well under Danish conditions. The common practice is to leave the land under temporary grass for three or four years, part being made into hay and part grazed by the cows. I saw everywhere excellent crops of lucerne, usually mixed with other grasses, among which timothy showed up very well. The lucerne is managed in much the same way as the clover, but is rarely grazed. Three cuts a year is the average with this crop. A good deal of cocksfoot is grown for seed and the aftermath is often the only grass a farmer possesses. The mixtures of oats, barley, and peas, nearly always do well and can be relied upon to give a good bulk for soiling purposes. I met the useful practice of cutting these crops with a grass mower and raking them into rows with a horse rake. The rake takes two swaths, and after emptying is allowed to run for a few yards before being lowered again. It then returns along the same line and collects up the parts missed before. In this way good thick rows are made which are easy to load into a wagon.

Rye and wheat are grown for grain, but the acreage is not so big as that for barley or oats. The general average crop is very good, and is distinctly better than in England, so far as I was able to judge. Sugar-beet is only grown in certain parts of the country, but what I saw was well up to the standard of the other crops.

The soil and climatic conditions suit potatoes very well, and good yields are obtained. Unfortunately "blight" is very common and does a great deal of damage. Spraying is performed by nearly every farmer, but the damp weather spoiled the results of all the work I saw done. It was quite refreshing to hear Up-to-Date spoken of as a popular variety!

I saw several patches of chicory growing for a drying factory. It appears to be a reliable and profitable crop, but not much is grown.

Cleaning operations are concentrated mainly on the root crops, which are thoroughly cleaned by horse and hand hoe. Other cleaning operations I saw performed on land broken up after hay-time showed me that a Dane will take every opportunity of keeping his land free from weeds by cultivating and harrowing as much as possible. In the humid climate where dry hot days are rare it is a matter of considerable difficulty to get land clean when infested with couch, but such patches are rare. The Dane's attitude is summed up by the statement, "In England you spend a lot of money *getting* the land clean, we *keep* it clean." The general aspect of the country bears out

this statement, but I doubt whether they attain their object at less expense than we do.

There is no doubt that Danish farmers use far greater quantities of artificial manures than would be considered profitable in England. For this purpose Denmark is an active buyer of phosphates and potash manures from Germany and England, and obtains large quantities of synthetic nitrogenous compounds from Norway. As far as I could gather wheat, barley, and oats almost invariably receive dressings corresponding to from 1 to 2 per cent. of sulphate of ammonia per acre; and nearly every field is dressed at the rate of about $1\frac{1}{2}$ cwt. of superphosphate per acre every year. I met the case of a small patch of grass which had been manured with phosphates in this way each year for the last ten years. Seeing that these dressings are applied every year, although not excessive in any one season, they represent a much greater outlay on artificial manures than is common on ordinary farms over here. It must also be borne in mind that very little produce is sold off the farm except in the form of butter or bacon, and therefore a great deal of the manurial value of the different crops finds its way back on to the land. In addition, all dung is very carefully stored under very substantial sheds where losses are reduced to a minimum. Almost every drop of liquid manure is saved and is carted back to the land. By the elimination of waste in this way and the heavy expenditure on artificial manures almost all the land is kept in a high state of fertility and carries crops which average considerably heavier yields than in England. It is not so much that the best crops are better than these over here, but the general average is distinctly higher. One rarely meets a case of a crop failing in Denmark, or a piece of land which is so weedy that crops cannot grow at their maximum rate. Another important point about the Danish farming system is that because nearly all skim milk returns to the farm and is given to the pigs the loss of phosphates and nitrogen from the land is reduced to a minimum rarely met with in any other part of the world.

Reference has already been made to the fact that cows are kept under cover for the greater part of the year and are always tethered when out in the fields. The problem really is to find crops which will stand grazing, for the Dane has little grass, and almost the only other crops are temporary clover leys and cocksfoot aftermath. A few farmers graze lucerne but are invariably condemned by their neighbours for doing so. Tethering is not quite so troublesome as some people may imagine, because, in the first place it does away with all the trouble of having hedges and it also allows all fields on the farm to be grazed without waste of time in temporary fences. It is a common sight to see one man with 20 to 30 cows on the lead together, and as a cow usually comes home to be milked, difficulties of water supply are not very great. With store or breeding stock, not in milk, the question of water supply becomes one of more importance, which is best met by the use of a water cart if the numbers are

at all great. Lines of stock properly tethered across a field will clear up the crop without soiling uneaten portions to any appreciable extent, and they will leave the stubble almost as short and even as after a grass-mower. Although this produce is not at all likely to become popular in England under present conditions it is well worth consideration for patches of crops growing on arable land which a farmer would like cleaning up, and for the eating off grass on the roadsides without the expense of a full-time attendant.

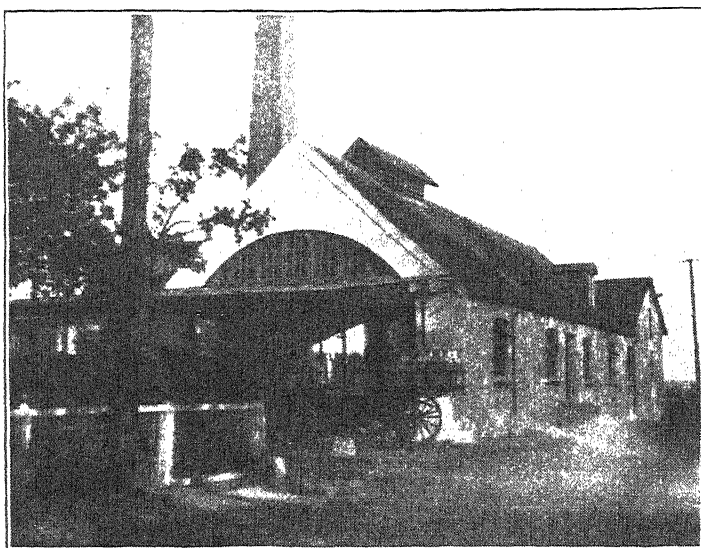
No picture of Danish farming would be complete without some reference to co-operation. In Denmark co-operation has developed to such an extent that it is difficult to mention anything which a farmer produces or requires which is not handled by a co-operative society. These societies have a scope ranging from credit facilities, insurance, and milk recording, to bacon factories, creameries, and egg-collecting depots. While all these associations are in nearly every case quite distinct and specialize in one single article or service there is a loose federation among them which, although it gives them little commercial advantage, is a bond which holds the whole organised framework together, and which makes its stability such as to be absolutely impregnable. I refuse to admit that, considered within the narrow limits of business efficiency, co-operation is more advantageous than open individual competition. Co-operative societies have the same capital to find, the same labour bills to pay, and the same risks to shoulder as private firms engaged in the same operations. Through the loss of the sense of absolute and direct personal responsibility the management is usually more efficient in the case of the private concern. Where, however, the private concern is inclined to make big profits, co-operation will be found by far the best system in the long run, since all profits are either sunk into business expansion or returned to the shareholders themselves. For these reasons co-operation succeeds very well in those operations where processes are relatively simple, where rapid changes are not taking place in manufacturing processes, where marketing conditions are simple and direct, and where there is scope for unscrupulous individuals to take advantage of the special conditions of buyer and seller. Such conditions are found everywhere in Denmark. Creameries and bacon factories are relatively small concerns, they employ few men and little complicated machinery, and the lines on which they run vary very little from year to year. A small factory is able to obtain nearly all the economies of specialised labour and up-to-date machinery that larger ones can gain with more capital at their disposal. In addition, the various export co-operative associations take off the greater part of marketing problems from local factories' shoulders and themselves deal in articles whose grade is standardised and whose supply is fairly steady from week to week. Also, seeing that Denmark is covered by smallholders producing milk, butter, and eggs, for a very distant market, before the advent of co-operation it was the happy hunting ground for unscrupulous dealers who took advantage of the very small bargaining

power of these small farmers. The first associations were formed by the smaller farmers in many cases, and later they expanded to include almost every producer in the country. The success of these early enterprises led to more being organised and the co-operative movement has grown like a snowball.

Apart from the question of business efficiency, co-operation has one very large advantage over open competition which is extremely difficult to measure, since it is social and affects the people themselves. Co-operation inspires confidence in the farmers to a much greater extent, it takes all worries of marketing entirely off their shoulders, and is usually prepared to accept any amount of produce if of the right quality. The factory alone fixes the price and the farmer shapes his plans accordingly. Co-operation is also a social bond between one shareholder and another; they are linked by common aims and interests, and help each other as much as possible. It seems to have none of that deadening influence which is usually so apparent when farmers in England meet to form a common policy which involves some sacrifice for some individuals. Possibly, owing to a distant market and a specialised farming system, problems are less complex than in England. At least more gets done with little contention. At the present time co-operation in Denmark in all its different forms amounts almost to a complete monopoly which would be intolerable in other hands. This big co-operative machine has to produce under the full blast of world competition and is therefore efficient, and is something of which each Danish farmer is really proud. He feels that he has a stake in the country and that he is not being ground down between upper and nether millstones.

The individual factories need not detain us very long since we are only considering them from the standpoint of the farmer himself. Creameries occur nearly every five miles in Denmark and deal with *all* the milk produced in their area. Milk is collected from the farm once a day; in the morning. Each farmer's supply is weighed, and a sample analysed. Efficient machinery turns the milk into butter or cheese, and skim milk, after pasteurisation, which is legally compulsory, is returned to the farmer for a small charge. Through the employment of machinery butter is produced on the same lines in every part of the country and has a standard quality which is its best advertisement. I had the privilege of seeing butter being tested in an export association's warehouse prior to export to England, and I can vouch for the high average quality of every sample tested. This does not represent merely the best kind of butter produced, but corresponds to all the milk the farmers have for disposal. In other words, a Dane only produces first-class articles and gets paid accordingly. Government inspectors are also responsible for seeing that every sample of butter sent abroad is satisfactory.

Payment for milk is based on its fat content, with certain allowances for cleanliness, etc. In this way farmers are encouraged to produce milk of good quality and purity and they are stimulated to



THE CREAMERY AT RANDEV.

use breeding stock of good recorded ancestry. During last summer farmers were getting round about 8d. per gallon on the farm for their milk, depending on its fat content. During recent years the price of milk has been little influenced by seasonal changes, and there has been no appreciable difference between summer prices and those in winter. The price is determined entirely by the state of the export market for butter, and now that the bulk of the supplies of butter from New Zealand arrive during our winter months the price is kept much more steady than that for liquid milk in England. This low price for milk deserves careful consideration, together with the special methods that are employed, and the long period during which the cows are on the full winter ration.

A certain amount of cheese is made which is nearly all of one kind produced specially for the Danish market, and very little is sent abroad. This position is causing some apprehension in Denmark since at present there is no alternative if the demand for butter begins to wane; and efforts are being made to produce a Danish cheese which will be able to compete on equal terms with English and Colonial varieties.

Bacon factories occur about every 20 miles and deal with *all* the pigs in their particular area. Practice varies but little and many of them will also take new born bull calves and fat heifers as well. They refuse to touch old sows and boars, or pigs which do not come up to their standards of size and suitability for bacon, and they will

not accept old cows. This is the most potent force for making all farmers produce first class pigs. These factories I saw paid on the dead carcase weight with a scale of prices divided into three grades, but the difference between first and third class pigs is very small. Farmers in any one village can only send their pigs on one particular day of the week and must accept the price fixed by the factory for that week—the price depending on the state of the export market. The factory will take all the pigs a farmer has of the right type, and price alone regulates the supply. All pigs are inspected by a Government official for any signs of disease, and any carcase with which he finds fault is not allowed to go abroad.

Both creameries and bacon factories are organised into bigger associations which take over all their produce and distribute it to the best advantage. Other co-operative associations are of less relative importance, covering, as they do, seed grain, sugar beet, milk drying, oil cakes and meals, breeding societies and insurance, etc. They are all run on similar lines and for the benefit of the farmer himself, and nearly all are uniformly successful.

In any view of Danish agriculture it is absolutely impossible to dissociate the farmer from the co-operative movement since both are mutually dependent on each other. It is only by co-operation that the farmers are enabled to continue with their small holdings, while it is entirely owing to the special farming conditions that the factories can run so efficiently. Efficiency in the factory means less waste and a higher price to the farmer, who in turn is encouraged to adopt still more intensive methods, which further react on the factory. Special points which are quite obvious are as follows:—

Transport.—One factory handles all the farmers' produce in one area. All farms are producing the same kinds of things on an intensive system. Costs of collecting are therefore at a minimum. The factory sends produce to the export association in bulk once a week—so reducing railway charges. Carriage by sea is always cheap. The produce is still conveyed in bulk lots when in England, and again saves carriage.

Uniform supply.—The supply of milk and pigs does not vary widely from week to week, and the changes which occur can be foreseen and preparation made for them. In the case of bacon factories steps are taken to regulate the supply of pigs through the week. This practice avoids large market fluctuations in supply.

Standard quality.—Like No. 1 Canadian wheat the standard of Danish produce is something which can be counted on without individual inspection. With butter and bacon the standard is amazingly and uniformly good, and all supplies sell at top prices. This uniform standard is the best selling asset a good article can possess, since people get to know about it, and know what they will obtain if they ask for it. Large quantities of uniform quality also reduce the number of middlemen since costs of bulking and sorting different kinds in small lots is reduced to a minimum.

English produce fails in that, while occasional samples may be excellent the supply is neither big nor constant enough to create a demand, and few other exactly similar lots can be obtained in the same market.

Large scale production.—While the factories are not big they have distinct advantages in labour-saving devices over a single English farmer who attempts to produce butter or cheese.

These advantages are no special privilege of co-operation and could be obtained by private firms under similar conditions, as for instance, in the big *Trifolium* organisation. The economies, however, can only be maintained under very special conditions such as obtain in Denmark, and it is extremely improbable that the success of similar organisations in England would be so striking, owing to the very different conditions that English farmers have to face. The efficiency is such that a Danish farmer actually gets a little more per stone for his pigs than an English farmer with whom he is in competition. (An average of 11s. 4d. per stone during last summer. For milk a farmer got about 8d. per gallon during the same period.) For milk the figure does not appear very high, but it must be remembered that this milk is made into butter—a practice not considered very profitable in England—and is the price for all the milk produced on the farm. Another important point is that on a typical Danish farm, carrying, as it does, upwards of one pig all the year round to every acre, the income from pigs is about equal to or may exceed that from the cows.

It is these prices that one should bear in mind when attempting to compare the margins under which Danish and English farmers are compelled to farm to obtain a profit. Although the figures quoted were current during a period when bacon prices were unusually low, the export demand for butter was keen and the prices for butter met with general satisfaction. On a small holding the net income per week cannot be very large, and it is quite wrong to imagine that Danish farmers are making profits at an enormous pace at the expense of their English rivals. Actually they appear to be keeping their heads above water and to be in a position to execute all improvements as need for them arises. One rarely meets with farmers who have made such large fortunes that they can retire from business, and no farming millionaires are found. While the larger farmers are usually in a position where they are busily employed without doing much manual work those who farm less than 50 acres usually work very hard indeed. From my own observations the farmer's family works harder than hired workmen in England, and for longer hours. A common system of hours is to begin about 5.30 in the morning, have quite a short break for breakfast at about 7.0, and then work until 11.30. In the afternoon work begins again at 1.0 and continues without a break until 6.0. This gives a working day which approximates to 10 hours, during which little time is lost and everyone works with a will. The Dane shows every sign of being really interested in his work and does not

view it as a burden, because he is working for himself. I was particularly impressed with the afternoon spell of work which gives scope for getting through a considerable amount on jobs of first-class importance, and the whole day's output is considerably higher than in England.

Paid workmen are few and wages run lower than over here. A common type of workman is the so-called *fodermester*, who is put in charge of all the cows and pigs and fixes his own times to a large extent. He is usually paid by the year or half year, and is not in such easy circumstances as men doing similar work over here.

I feel quite safe in saying that as a general rule ordinary farm-houses in Denmark are as substantial and distinctly more comfortable than in England. These houses also contain better furniture, very tastefully arranged, and I really think that the Danes spend much more care upon their houses than we do. Needless to say, all fittings in the house are kept spotlessly clean. Mention has already been made of telephones and electric light, of which full use is made.

It comes with something of a shock to learn that all Danish farmers eat margarine, and that they hardly ever see the butter which they have helped to produce. In addition, I should say that an Englishman eats three times as much meat; and that which a Dane eats is not expensive. At present the Danes are supplied with beef through the old cows and bulls which are not of high enough quality for export, while in addition the bacon factories supply all kinds of by-products, such as sausages, and stewing meat, which sell at low prices. Taken all together the meat bill of a Danish family is very low. Even eggs are regarded as somewhat of a luxury, and are not used unnecessarily. For vegetables an ample supply can usually be obtained from the farm gardens which are kept in very good order for this very purpose. At present, Danish families eat about equal quantities of rye and wheaten bread, and a good deal of oatmeal and cheese is consumed as well. These foods are just as nourishing and often distinctly more wholesome than those to which we are becoming accustomed, and it is extremely rare to see a Dane showing any signs of malnutrition or of real want. Danes also wear wooden clogs instead of more expensive boots.

As a consequence, although Danish small holders have no large weekly income their expenditure on living costs is so low as to be within the margin, but with no great amount to spare. There is plenty of evidence to show that Danish farmers are content with this standard of life and do not feel at all oppressed by economic forces. One indication which points in this direction is the number of small-holders who own motor-cars, certainly a higher percentage than in England, and another is the care and expense they bestow on their houses and farms with little financial return. This really means that Danes as a whole have a slightly different outlook on life than Englishmen and their sense of social values differs from ours.

No account of Denmark would be complete without some mention of the educational system of which they are very proud. After leaving the elementary school Danish youths usually attend one or two winter courses at the different high schools, and young girls attend during the summer. In addition, the system of sending farmers' sons to gain experience on other farms, often three or four different ones, is well developed, and while it has certain disadvantages it is a valuable training for the young men. In addition the State gives scholarships to farmers' sons to go as pupils on farms abroad, in England, Holland, and Germany: a practice that our Government might well copy.

As far as I could gather, the standard of scholarship in the high schools is not particularly high. Their main secret seems to be that a knowledge and love of the country is instilled into the young Dane and never leaves him afterwards. It is most refreshing to hear people speak with pride of their homeland, and it is a point which is well worth the consideration of educational authorities in rural areas in England.

One more striking feature is that the Government does very little actively to support agriculture in Denmark. There is no protection and, as far as I am aware, no bounties or subsidies. It is true that the farmers get cheap transport through State railways, but that is more of an accident than a definite policy. The attitude of the Government is benevolently neutral. The organisation of co-operative factories is quite independent of State aid, and even the high schools arose in the first place from the people themselves. Typical Government action is the inspection of butter before it is exported and the veterinary inspection of pigs during conversion into bacon. The State is pursuing an active small-holdings policy, and believes that any money required for this policy is well spent, but such outlays are more in the nature of a long-dated investment than a plan to assist Danish agriculture in free competition with the outside world.

In attempting to draw one single conclusion at the end of this account I should be inclined to attribute the present farming prosperity in Denmark to the following causes in the order named:—Low living costs and hard work, co-operation, and a specialised farming system. This organisation has arisen through the force of circumstance, not through a race of supermen or any political programme, and it is built to suit an active export demand for its produce. Should this demand ever fail through any cause the whole organisation would crumble to pieces, and Danish farmers would be in a much more sorry plight than the English are at the present time. While we can copy with advantage many Danish practices, any attempts to import the *whole* organisation into England are doomed to failure, and English farmers must be left to build up their own special system to meet the very special and complicated conditions with which they are faced.

THE DAIRY CONFERENCE IN CUMBERLAND AND WESTMORLAND, 1924.

By Miss J. STUBBS.

THE Annual Conference organised by the British Dairy Farmers' Association has now come to be recognised by many members as one of the most profitable and enjoyable events of the year, and the Conference which was held in the Lake District, with Keswick as a centre, proved no exception to the rule.

Keswick is a most charmingly situated old market town and probably the best centre for visiting the beautiful Lake District.

A very interesting programme had been arranged by Mr. W. Burkitt, Bishop Auckland (Chairman of the Conference), with the help of Mr. R. Lindsay Robb, Principal of the Cumberland and Westmorland Farm Institute, and Mr. J. Thornborrow, F.A.I., of Penrith, the well-known Auctioneer and Shorthorn expert.

The itinerary from June 16th to 23rd was as follows :—

Monday, June 16th.—Meet at the Keswick Hotel for Dinner at 7.30 p.m. 8.45 p.m., Paper by Mr. R. Lindsay Robb, of the Cumberland and Westmorland Farm Institute, Newton Rigg, on "Dairy Farming in Cumberland."

Tuesday, June 17th.—Leave Keswick 9 a.m. for Newton Rigg Farm and Dairy School (Cumberland and Westmorland Joint Committee). Arrive Newton Rigg 10.15 a.m. Those members who wish can go on to Penrith at 11 a.m. for the weekly auction mart sale of high-class non-pedigree Shorthorn cows, returning to Newton Rigg 12.30 p.m. for lunch. After lunch, inspection of farm, leaving at 3 p.m. for Musgrave Hall, Skelton, where Mr. J. H. Toppin will entertain the members to tea, and his pedigree Shorthorns, Oxford Downs and Cumberland Pigs will be inspected. Leave for Keswick 6 p.m. Dinner 7.30 p.m.

Wednesday, June 18th.—Leave Keswick 9 a.m. for Lowther Park and Castle. Inspect park, gardens, &c., by kind permission of the Rt. Hon. the Earl of Lonsdale.

Return to Penrith for luncheon at the Crown Hotel at 12.30 p.m., by invitation of Mr. E. O. Bolton, of Leeming, Ullswater. Leave Penrith at 1.45 p.m., view Mr. John Gill's Shorthorns at Stainton, and arrive Pooley Bridge to catch the 3 p.m. boat up Ullswater. Arrive Ullswater Hotel 3.50 p.m., where

Mr. John Gill will kindly entertain the party to tea. Leave at 4.45 p.m., motoring to the Leeming, where the party will inspect Mr. Bolton's dairy Shorthorns, grounds, &c. Leave for Keswick 6.30 p.m. Dinner at 8 o'clock.

Thursday, June 19th.—Leave Keswick 8.30 a.m., arrive Netherby 11 a.m. Inspect Captain Fergus Graham's dairy and Shorthorns. Arrive the Riddings, Longtown, 12 noon for lunch, by kind invitation of Mr. Jas. Hodgson. Afterwards inspect his large black pigs, &c. Leave the Riddings 1.30 p.m., arrive Lanercroft 2.30 p.m., where the party will inspect the Abbey, Naworth Castle, Grounds, and large black pigs, by permission of the Rt. Hon. the Earl of Carlisle. Motor to Boothby and take tea by kind invitation of Mr. Charles Roberts and Lady Cecilia Roberts. Leave Boothby 5 p.m. for Keswick. Dinner at 8 p.m.

Friday, June 20th.—Leave Keswick at 9 a.m. for Whitehall, Mealsgate, *via* the West Side of Bassenthwaite Lake, where the party will view the new pastures, Shorthorn cattle, Oxford Down sheep, and Cumberland pigs. Lunch by kind invitation of Mr. and Mrs. W. Parkin Moore.

Leave Whitehall at 1.30 p.m. for Balladoyle, near Silloth, to inspect the Ayrshire herd of Mr. J. J. Baird, producing Grade "A" Tuberculin Tested Milk.

Leave Balladoyle 3.15 p.m. for Southley, Wigton, where Mr. John Steel, M.R.C.V.S., will entertain the party to tea and afterwards exhibit his dairy Shorthorns and Cumberland pigs.

Leave Wigton 5.15 p.m. for Keswick, *via* Caldbeck, the birth-place and home of John Peel, thence down the east side of Bassenthwaite to Keswick for dinner at 8 p.m., when guests will be entertained to dinner. Evening dress optional.

Saturday, June 21st.—Leave Keswick 9 a.m. for Low House, Armathwaite, view Mr. G. A. Jamieson's Friesian herd, leave for Penrith noon, Lunch Penrith 12.45 p.m., leave 1.45 p.m. for Storms Farm, near Keswick, where Mr. J. A. Spedding will entertain the party to tea, and the production of certified milk will be on view. Dinner at 7.30 p.m. At 8.45 p.m. lecture by Alderman W. Parlour, F.A.I., on the early history of Shorthorns, illustrated by lantern slides.

Sunday, June 22nd.—Free day, or leave Keswick 10.15 a.m. for Derwentwater, Lodore Falls, Borrowdale, Honister Pass, Buttermere (lunch), Crummock Water and Vale of Newlands to Keswick. Dinner 7.30 p.m.

Monday, June 23rd.—Breakfast 7.45 a.m. Leave Keswick 8.30 a.m., *via* Thirlmere, halt at Grasmere to view church, &c., thence on *via* Ambleside and Windermere to Gossel Ridding, where the party will view the dairy Shorthorns of Mr. G. H. Pattinson, C.C., and take lunch by his kind invitation.

Leave Gossel Ridding 1 p.m., arrive Spital, near Kendal, 1.30 p.m., inspect Mr. J. Moffat's dairy Shorthorns. leave 2.30 p.m., arrive Oxenholme 2.45 p.m. for 3.2 p.m. train for London and South, and trains for Carlisle and the North.

Below is a list of the members present :—

- Mr. R. Batty, Grassendale Farm, Aigburth, Liverpool.
- Mr. and Mrs. F. Batho, Winston, Ellesmere, Salop.
- Mr. F. Bourne, 224, High Street, Chatham, Kent.
- Mr. and Mrs. W. Burkitt, Grange Hill, Bishop Auckland.
- Mr. and Mrs. A. F. Chillingworth, Reddown Farm, Highworth, Wilts.
- Mr. A. J. Clare, Market Place, Wells, Somerset.
- Mr. H. W. B. Crawford, Forneth Castle, Douglas.
- Mrs. J. Cunningham, 1156, Argyle Street, Glasgow.
- Mr. G. Eyre, 18, Redcliffe Square, London, S.W. 10.
- Mr. and Mrs. F. S. Francis, Wilkin Throop Farm, Templecombe, Somerset.
- Mr. S. Foster, Newlove House, Mossley Hill, Liverpool.
- Mr. W. P. Gilmour, Balmangan, Kirkeudbright.
- Mr. E. Goodwin, Yew Tree House, Burston, Staffs.
- Mr. T. C. Goodwin, Leighton Grange, Crewe.
- Miss M. H. Hall, Ryehills, Marske-by-the-Sea, Yorks.
- Mr. T. Hall, Marske Farm, Marske-by-the-Sea, Yorks.
- Mr. J. Holmes, Holmlea, Newcastle Road, Shavington, Crewe.
- Capt. F. R. Keeble, Brantham Hall, Manningtree, Essex.
- Miss Kelsey, Pepperdon, Moretonhampstead, Devon.
- Mrs. and Miss Kendall, Millow Hall Farm, Biggleswade, Beds.
- Mr. D. P. Lockett, Hill Farm, Moreton Wood, Whitechurch, Salop.
- Mr. R. Long, Stondon Manor, Shefford, Beds.
- Dr. H. L. Lucking, 102, Gt. Saffron Hill, London, E.C. 1.
- Mr. and Mrs. A. S. Maughan, Pontac Farm, Marske-by-the Sea, Yorks.
- Mr. and Mrs. J. Mackintosh, University College, Reading.
- Mr. S. W. Meyer, Mount Wise, Burley-in-Wharfedale.
- Mr. W. Nisbet, 1, Carlton Terrace, Kelvinside, Glasgow.
- Mr. and Mrs. W. Parlour, Waterside, Croft, Darlington.
- Mrs. B. Ravenscroft, Pendennis, Osterley, Middlesex.
- Mr. and Mrs. J. W. Rickheard, Scots Hall, Westleton, Suffolk.
- Mr. M. Y. Selim, c/o Egyptian Educational Mission, 28, Victoria Street, London, S.W. 1.
- Miss M. Shanks, Gosforth, Cumberland.
- Mr. F. E. Still, Britton Hill House, Sanderstead, Surrey.
- Miss J. Stubbs, Lanes C.C. Farm, Hutton, Preston.
- Mr. F. H. Thornton, Kingsthorpe Hall, Northampton.
- Mr. J. W. Towler, Wadlands Hall, Farsley, near Leeds.

Mr. E. G. F. Walker, The Hollies, Chew Stoke, Som.
 Mr. C. W. Walker-Tisdale, The Limes, Northallerton, Yorks.
 Mr. R. Wallace, Knebworth, Herts.
 Mr. S. R. Whitley, Rookwood, Shinfield, Reading.
 Miss L. B. Wills, Pepperdon, Moretonhampstead, Devon.
 Mr. and Mrs. M. G. T. Wills, Pepperdon, Moretonhampstead,
 Devon.
 Mr. B. Ravenscroft, *Secretary*.

Our Secretary, Mr. Ravenscroft, had thoughtfully engaged a through coach from London, so that for the members travelling by this route the usually somewhat tedious journey was made comparatively easy. Visitors came from all parts of the country, assembling on the evening of Monday, June 16th, at the Keswick Hotel, the headquarters during the tour, one of the premier hotels in the district and, with its fine collection of pewter, china, &c.—a veritable “Quinneys.” Its rock garden also merits a word of admiration containing as it does, a brilliant display of plants, for which the district is noted.

After dinner, Mr. Robb, Principal of the Farm Institute, Newton Rigg, in a highly interesting address, illustrated by lantern slides, gave a very comprehensive review of dairy farming in Cumberland and Westmorland. After remarking that the small farms, the majority of which are not over 60 acres, are chiefly representative of the agriculture of the two counties, Mr. Robb said that comparatively little cheese was made; either wholesale milk selling or butter making being the general practice. The continuation of butter making on a fairly large scale was financially sounder than appeared, as separated milk became available for stock rearing and breeding purposes, to which great attention had been paid, a distinct type of Shorthorn having been produced known as the dual-purpose Shorthorn. This animal had, besides good carcass formation and well developed flesh a milk yield which would compare favourably with any other dairy breed, and proved the criticism to be unsound, that one could not successfully get milk and beef from the same animal.

In criticising the milk records of Cumberland and Westmorland, agriculturists overlooked the fact that, being essentially breeding areas, many of the cows were transferred to other counties before they had reached an age at which a maximum yield of milk could be expected. The result was, that while the milk yields of many Societies further South were considerably increased by the introduction of this stock, the home counties lost the credit and value of milk records taken at a period of maximum yield capacity.

Mr. Robb next referred to cropping systems and the influence of climatic conditions. Swedes and oats were the most important of the root and cereal crops. Naturally much attention was given to the seed mixtures and the value of cocksfoot in feeding pastures was becoming more widely recognised.

Tuesday.—Glorious weather favoured the day's tour, which opened with a drive through beautiful country to Penrith, to visit the quaint old market and noted auction mart, to which few in the country can compare for high-class dairy stock. Here special prizes had been given by the Penrith Farmers' Auction Co., and a very fine show of Cumberland non-pedigree Shorthorn cows was seen, some of them making high prices at the sale afterwards.

From Penrith the members proceeded to the Cumberland and Westmorland Farm Institute, Newton Rigg—the oldest and perhaps the best known of the English Farm Institutes.

Newton Rigg was established in 1896, and later purchased by the Cumberland County Council, at the time when Westmorland joined Cumberland in the administration of agricultural education. Westmorland became entitled to send to Newton Rigg three-tenths of the number of pupils, contributing in this proportion to the cost of maintenance and obtaining representation on the Committee of Governors.

The original farmhouse has been remodelled and now provides accommodation for 20 students and the necessary resident staff.

The primary object of the institution is to provide instruction in the science and practice of agriculture and dairying, with special reference to dairy farming and stock rearing, the two most important branches of farming in Cumberland and Westmorland. The courses of study are specially designed to meet the needs of the sons and daughters of the farming community of the two Counties. The instruction, in the broadest sense of the term, is of a very practical nature and is consequently of immediate utility and application. Over 1,000 students have attended the courses, and well over 90 per cent. of them are engaged in practical farming. While the courses are thus primarily designed for those who intend to farm, provision is also made for those who desire a more advanced course, with a view to taking a degree in Agriculture and Dairying, by the award of scholarships tenable at Durham University or Reading College.

Newton Rigg was reached about noon. Alderman G. H. Pattinson, Chairman of the Governors, welcomed the members at a very excellent luncheon to which the guests had been invited by the governing body.

After lunch parties were conducted over various sections. Mr. Robb and Professor Gilchrist (Armstrong College) dealt with experiments in connection with crops. These were exceptionally interesting, demonstrating the best type of crop to be grown at high and low altitudes.

Mr. J. Proctor (vice-Principal), when dealing with farm stock, pointed out that their object had been to grade up a heavy milking herd of pedigree stock. Milk records had been kept and fully half the cows were qualified under the D.S.A. rules, and three had yields of over 1,000 gallons.

Miss Coward, the head Instructress in Dairying, led parties through the dairies, where there was an excellent exhibit of dairy produce. Miss Coward pointed out that a speciality was made in dealing with small quantities of milk.

Mr. Anderson, Horticultural Instructor, conducted visitors round the gardens and bottled fruit section, and Mr. G. MacRae Robertson, Poultry Instructor, showed all that was of interest in his department.

The next visit was made to Musgrave Hall, the estate of Mr. J. H. Toppin, who entertained the members to tea. The luxuriant pastures and prolific crops testified to the excellent management which this farm has received for so many years that it has come to be recognised as one of the best in Cumberland.

Mr. Toppin is an expert breeder and judge of Shorthorns, and his herd is probably one of the oldest in the kingdom, having been founded by his grandfather in 1822. It was a pure Booth herd until recent years, when the Scottish Shorthorn cross has been introduced. The progeny includes some notable show champions—amongst others, the famous white cow "Mischief," which, in addition to winning numerous other events, was champion at the Royal Show in 1921.

The senior stock bull, "Balcairn Bob," was paraded, and a bull calf recently purchased for exportation to South America. Among the stock seen were yearling heifers and many other cattle of pedigree strain. The breeder aims at a cow with a good frame and carcase, and yet capable of giving a milk yield of from 600 to 700 gallons.

Besides this old established herd, Mr. Toppin's flock of Oxford Down sheep is numbered amongst the oldest registered flocks of this breed in the kingdom. It includes 120 ewes with about 170 lambs, 40 shearling ewes, and a promising lot of 50 shearling rams. In addition, Mr. Toppin had about 80 Cheviot ewes.

Truly all members of the British Dairy Farmers' Association must have found on Tuesday, in the dairy at Newton Rigg, and on Mr. Toppin's farm the realisation of their ideals in whatever branch they were specially interested.

Wednesday.—An early start was made from Keswick for Lowther Castle, the principal residence of the Earl of Lonsdale. The drive led through the beautifully wooded park in which was a large herd of deer. The estate is one of the largest in the country, and if a whole day could have been devoted to sight-seeing it would have been impossible to exhaust the interest to be found in the palatial castle and wonderful grounds.

Entering at the highest point the grounds lay stretched before the Castle; a beautiful expanse of gardens extending over 50 acres. Mr. Anthony Lowther and Captain Wingate, the estate agent, conducted the party to inspect some of the cattle stocked on the three farms which are in hand. At Lowther Newton a small herd of Dexter cattle is kept, among the cows being one which yielded 1,000 gallons in a lactation. At the middle farm, with modern, airy and well-lighted buildings, dual purpose Shorthorns are bred, there being about 40 cows

in milk. The third, the highest lying farm, is devoted to Galloway cattle crossed with White Shorthorns, and from here each year bullocks and heifers are sent for fattening to the Earl of Lonsdale's Rutlandshire estate.

After Mr. S. R. Whitley had expressed the thanks of the members to Mr. Lowther, the party left for luncheon at the Crown Hotel, Penrith, by invitation of Mr. E. O. Bolton.

Many influential farmers of the district joined the company on the ensuing visit to Mr. John Gill's place, Thorn Farm, Stainton. Here the inspection was necessarily hurried, but great interest was displayed in the Shorthorns, which were chiefly of Scotch pedigree. Mr. Gill having laid the foundation of the herd in 1904, and being the pioneer breeder of Aberdeenshire Shorthorns in Cumberland; the blue-grey heifers, too, were greatly admired.

The members were unwillingly obliged to leave seeing more of this well-bred stock in order to catch the steamer from Pooley Bridge to Ullswater, where Mr. Gill entertained them to tea before the next visit to Leeming. Here further joys awaited enthusiastic cattle breeders and lovers of country. The farm has a delightful situation overlooking Ullswater with fine grounds containing between seven and eight hundred named varieties of trees.

Mr. Bolton is one to whom agriculture in the district owes much; he has ever been an enthusiast in forwarding the interests of the industry and has rendered specially good service to the County Milk Recording Society. Mr. Bolton had previously expressed a fear that his herd was too small to merit a visit, but though his farm may not be extensive, the words of the guide book were correct that he has "one of the choicest small herds in the county." Being a keen supporter of milk recording, one naturally found Mr. Bolton had kept accurate records of the yields of his cows, but he has never sacrificed constitution for the sake of milk, his ideal being a cow that will give from 800 to 1,000 gallons in an ordinary lactation without forcing. His herd is still young and all the animals had recently passed the tuberculin test.

Thursday.—It is inevitable that any drive through England's wondrous Lake district country should be beautiful, and Thursday's thirty mile drive to Longtown afforded some perfect views, culminating in the very fine one seen from Riddings with the Solway Firth and Criffel—that local barometer—to the north and north-west, and the Cumberland Fells away to the south, and to the north the historic Lochinvar ground. A short halt was made *en route* at Netherby Home Farm.

Lying so near the border this estate has seen some stirring historic events during the border raids and suffered many depredations; but the Grahams of Netherby were undaunted in their agricultural zeal and reclaimed thousands of acres of land, transforming what was practically a wilderness into fertility, till, at the present time, the 500 acre farm which Captain Fergus Graham has been farming for about 18 months includes some of the richest pasture in the valley of the Esk.

Captain Graham's herd is not yet built up, but there were to be seen several typical cows of the dual purpose type, whose milk records are being kept. He had also a good breed of Large Black Pigs, and a great feature was the poultry, there being about 700 White Wyandottes on the farm.

Riddings Farm, four miles from Longtown, is mostly arable, farmed on a six year rotation of oats, roots, oats and grass (three years). Mr. James Hodgson, the owner occupier, is a great believer in modern methods, making full use of tractors and being a liberal user of both slag and lime for fertilising.

The chief object of interest was the herd of Large Black Pigs, founded in 1920-21, by selecting pigs from the Vahan, Osborne, Stansure, Sudbourne and McHeather herds. Mr. Hodgson has been of the Large Black breed, partly on account of its suitability for keeping very successful in the Show ring. He is an enthusiastic supporter on the outdoor system which he largely adopts, except in winter, when the pigs are housed in order to economise labour and to secure manure for placing upon the farm where required. The hogs and cast gilts of the spring litters are kept for bacon, and the autumn litters reared for porkers. Mr. Hodgson considers this breed an ideal quick-growing bacon-pig. He also specialises in the production of blue-grey cattle.

Prior to the visit to his farm, Mr. Hodgson entertained the members to an *al fresco* luncheon on his lawn.

The afternoon was spent in visiting two places of unusual interest in this historic part of the country, both unsurpassed in beauty of situation.

First, Lanercost Priory, which has been well described as the architectural gem of the diocese. It is renowned for its wonderful crypt, and is beautifully situated in the Vale of Irthing. From the priory the River Irthing was crossed to Naworth Castle, the home of the Earl of Carlisle. This old castle of legendary fame, dating from the 10th century, has been immortalised by Sir Walter Scott in his "Lay of the Last Minstrel," as the home of "Belted Will."

Continuing their journey to Boothby, Mr. Charles and Lady Cecilia Roberts kindly entertained the Conference to tea.

Friday.—Friday's itinerary was of special interest, the route leading through Piel Wyke and Bewaldeth for Whitehall. It was here that two generations ago Mr. George Moore founded a herd of Bate's Shorthorns, selling these, however, in 1876, and realising some four figure prices. Mr. Parkin Moore, the present owner, received the visitors at Bothel, and a most interesting tramp ensued through the charming country-side, inspecting the wonderful pastures to the improvement of which Mr. Parkin Moore has devoted careful attention, with the result that some of his three-year pastures equal, or even outrival, old established ones, much to the amazement of some of

the southern members. The cultivated area, extending over 5,000 acres, allows ample space for the experiments which Mr. Parkin Moore carries out so enthusiastically and successfully.

The cattle included a herd of about 100 head of pure bred short-horns. Some noted bulls have been produced, including Masterkey (sire of Mr. Toppin's Mischief, seen on Tuesday). There was also a herd of Galloway cows, and apart from the connoisseur's interest, a Landseer's brush might have done justice to the picturesque bunch of Highland cattle. Their heads gracefully crowned with spreading horns suggested some fine antlered creature of their native hills, their wild appearance contrasting with their placid contentment as they grazed in the meadow which lay in idyllic surroundings, with a background of green woodland, whose alluring shade beckoned invitation to the peacefully grazing cattle.

During the past few years Mr. Parkin Moore has established fine flocks of pedigree Ryeland and Oxford Down sheep, the former being the only flock of this breed in the county. A number of experimental crosses with Cheviot and Herdwick breeds have also been carried out.

Following the tour of the fields and herds the visitors were most hospitably entertained to luncheon at Whitehall.

Leaving the heights of Whitehall the journey was continued in the direction of Silloth, on the Solway Firth, to the low-lying farm of Balladoyle, where Mr. J. J. Baird runs a herd of non-pedigree Ayrshire cattle, probably the only Ayrshires in Cumberland. By request, Mr. Crawford of Castle Douglas, a member of the Conference, and a well-known Ayrshire breeder, chose a typical animal from the herd and skilfully demonstrated in a very interesting manner the points of an Ayrshire cow. The milk was Grade A (tuberculin tested), Mr. Baird being one of the first farmers in the North of England to produce graded milk.

In spite of the fact that the cowsheds were by no means model ones they were kept spotlessly clean.

A simple, but effective method of sterilization was carried out in a box cupboard constructed over the ordinary farm copper, the steam from the boiling water passing into the cupboard through holes in the boiler lid.

Returning to Wigton the members were entertained to tea by Mr. John Steele, whose farm at Southley was afterwards visited. Mr. Steele is widely known as a pioneer in the formation of the Cumberland Pig Breeders' Association, and his herd of pigs and Dairy Shorthorns attracted the closest inspection, and many were the questions asked and freely answered. Mr. Steele said the Cumberland pig was making splendid progress both in its own and other counties, and he claimed that it had come to stay not only in England but throughout the world. It is a breed that will live out of doors practically all the year.

The drive back to Keswick took one through the heart of the "John Peel" country, his grave being visited at Caldbeck Church on

the way, thence down the east side of Bassenthwaite Lake, the tour affording some further inspiring views of the exquisite mountain scenery.

In the evening Mr. Burkitt presided at the Conference dinner, at which many of the kind hosts and hostesses of the tour were present.

Lady Mabel Howard, in proposing the "British Dairy Farmers" spoke of the good work done by the Association generally and in the matter of smartening up the dairying side of agriculture.

Mr. J. Mackintosh (University College, Reading) suitably acknowledged the toast, expressing the keen appreciation of the members for the hospitable welcome they had received.

Mr. S. R. Whitley, giving "Our Guests," spoke of the necessity of successful dairy shows and the amount of personal profit which accrued through using the best scientific methods of feeding and dairying generally. He said the Research Institute was keenly interested in the pure milk supply, and as a result of what had been accomplished, a portion of the milk supply of this country would compare favourably with that of any other country.

Mr. Parkin Moore responded and remarked that one of the secrets of the successes of Cumberland farmers in difficult times was the mixed farming.

In tribute to the county in which the Conference had been held Mr. T. J. Thornborrow sang "John Peel," receiving lusty aid with the chorus.

Saturday.—Saturday's programme catered for Friesian specialists and was a comparatively easy one. The morning was dull and inclined to rain, but the sun burst forth before the members reached Armathwaite to see Messrs. D. and G. Jamieson's Friesian herd at Low House Farm.

The cows were all heavy milkers. The two year old and yearling heifers were nearly all sired by Chaddesley Panboy, whose dam has a record of 1,500 gallons with 4 per cent. butter fat. One of the bulls, nearly a year old, seemed to have great possibilities, bred from the heifer Loirston Sweetbriar. His sire was imported from South Africa two years ago. The principal stock bull, Thurston Karel General, then 2½ years old, was bred at Thurston Hall, and sired by Kirkhill Karel. He was champion bull of the Slough Sale of the B.F.S., and his calves give promise of quite exceptional merit.

The buildings at Low House are up-to-date and well suited to the keeping of good stock, being lighted by electricity generated on the premises.

In the afternoon the Conference was welcomed at Storms by Mr. and Mrs. J. A. Spedding, who made the visit exceptionally interesting and later entertained the members to tea.

Storms is a model dairy farm with buildings constructed on modern principles, being light and airy, and the dairy equipment is of the best. It was one of the four farms originally licensed for the

production of certified milk when the new grading system was initiated by the Government. Besides agencies established in many of the towns of the North West of England, a cafe has been opened in Keswick and forms a depot for the sale of farm products, including high grade cream ices; about 170 gallons per day of certified milk are sold from this farm, and the whole system in its cleanliness and thoroughness was of great interest to the members of the Conference.

The day's programme closed by a delightful lecture on the early history of Shorthorns given by Alderman W. Parlour of Darlington. This was excellently illustrated by slides and followed by an interesting discussion.

Sunday.—A so-called "free-day" catered for the lighter side of the Conference and proved a fitting culmination in the unsurpassed beauties seen, as far as the tour of the Lake District was concerned. The expeditious motors were exchanged for the more characteristic coaches-and-four, and members left Keswick shortly after 10 o'clock *via* Derwentwater, paying a short visit to the beautiful Ladore waterfall. Thence to the "Bowder Stone," an immense fragment of rock supposed to be the largest in the world and to resemble a ship lying on its keel. The inevitable, if somewhat unromantic, ascent was made of this by the artificial stairway, and the snapshots taken will provide happy reminders of the enjoyable Sunday tour. On through Borrowdale, a most impressive sight with the barren Fells rising in the distance in striking contrast to the fertility of the valleys. Then the hard climb through the thickly wooded Honister pass, where a number of members would gladly have lingered to examine the luxuriant flora of the district. After lunch at the Buttermere Hotel the lake was visited by a few, the majority preferring to enjoy the sunshine and to view the lake from a distance. The homeward journey by the end of Crummock Lake and through the Vale of Newlands, with exquisite scenery all the way to Keswick, completed the day's perfect tour.

Monday.—Another excellent programme had been arranged for Monday, the last day of the Conference, beginning again with a drive through more wonderful scenery, so that for those who visited the Lake District for the first time (or indeed to those who knew it) it must have seemed that its beauties were inexhaustible. A halt was made at Grasmere Church, several members taking the opportunity of this halt to visit Hayes, the celebrated alpine florists, where a number of interesting purchases were made; then on through Ambleside and Windermere to Gossel Ridding, a charmingly situated farm overlooking Windermere Lake. Here, Mr. G. H. Pattinson, who is the Chairman of the Governors of the Farm School, Newton Rigg, keeps a herd of dairy Shorthorns. Mr. and Mrs. Pattinson welcomed the members and handed to each a delightfully illustrated little guide book to the herd of milk recorded dairy Shorthorns.

In 1908 five cows were purchased from the late Mr. Robert Nicholson, The Gilt, Crosby Ravensworth; at a later date five more of local families were added, and these ten cows constituted the foundation of the herd. Mr. Pattinson has always kept in view the object of milk production and records under the Kendal and South Westmorland Society.

Three of the cows may be specially mentioned—Fairy Heath, which gave an average of over 8,535 lbs. of milk per annum with eight calves; Heather Rose, which gave over 1,000 gallons in 283 days; and Spring Heather, which in her third lactation gave 10,922½ lbs.

The senior stock bull Clansman, was bred by Mr. R. D. Holt, of High Borrans, Windermere, and its sire was from a 1,000 gallon cow, Strawberry 13th, which won the Dairy Shorthorn Association's prize at Northumberland Show in 1914. The younger stock bull, Rose's Masterpiece, was bred from Heather Rose, already mentioned, and its pedigree shows that it comes from a family which includes such notable cattle as Clara's Beauty, winner both of the Barham Cup and the National Butter Challenge Cup at the London Dairy Show in 1923.

Following the inspection of this interesting herd Mr. G. H. Pattinson most hospitably entertained the members to luncheon at the Hydro Hotel.

Knowing the reputation of Mr. J. Moffat for cattle breeding the visit to Spital was anticipated with unusual interest. Though recently Mr. Moffat has not done much showing on his own account, successes among cattle bred by him have been most notable, including among others at the London Dairy Show in 1923, four cows out of five in the prize list of the class for Dairy Shorthorn cows born before August, 1918; in the class for those born between August, 1918, and August, 1920, the second, third and fourth cows out of 24 entries, included two bred by him, and one, a daughter of a cow bred by him; and Charming Lass, the winner in a class for non-pedigree cows was also bred by him. The famous great bull, Lord Nottingham, is also of Mr. Moffat's breeding. In addition he breeds Shire horses, and of these Pendley Vanity, the Junior Champion at the London Shire Show, was seen. Now Mr. Moffat has laid the foundation of a registered flock of Suffolk sheep.

Unfortunately, there was too little time to spare for this inspection as members had to leave Spital at 2.30 p.m. in order to join their trains at Oxenholme.

This brought to a close a most interesting and enjoyable Conference, and thanks are due to all those who contributed to make it such a success.

AN AFTERWORD.

By W. BURKITT, Chairman of Conference Committee.

I HAVE been asked frequently "Well, what were the outstanding features of the Cumbrian Dairy Conference?" and it is a pleasant duty, as Chairman, to add a brief personal opinion as an afterthought, so to speak, to the official report. Of course one's thoughts immediately run to the wonderful hospitality we everywhere received, the beautiful country we passed through, and the splendid weather which we were fortunate enough to enjoy; a week in the Lake District with only one shower is a happening worth comment, especially in so disappointing a summer as that of 1924. To pass to more agricultural and dairying matters, the wonderful pastures, fine stock, and general air of farming prosperity at Musgrave Hall are an abiding memory, linked with it being Mr. John Gill's good cattle.

The sail up Ullswater, and the delightful and, from a ladies' point of view, the restful time with Mr. and Miss Bolton, at Leeming, were another feature.

The out-of-door luncheon with Mr. Hodgson at the Riddings, is sufficient of a rarity in the north country to call for notice, and the beautiful old-world Lanercost Priory appealed to even the most practical minded agriculturist.

Mr. Parkin Moore's long series of new-laid pastures, with his detailed information as to the mixture sown in every case, were a great educational feature of our tour; it is pleasant to see a landlord so truly an agriculturist.

Mr. Crawford's demonstration on the points of an Ayrshire cow was a model of what such a lesson should be, given by a master of the art and a lover of the breed.

At Storm's Farm we saw certified milk produced in bulk, the whole system was thorough, and we felt Mr. Spedding's keenness must bear fruit, and reap its own reward; his statement that the bulk of the milk was consumed by the working classes in Lancashire towns, was interesting, and bodes well for the growth of the "super milk" movement.

On our final day the ladies admired Mr. Pattinson's beautiful house and grounds, and the keenness of so busy a public man with regard to his dairy herd, was a pleasure to the men of our party; then, as a grand finale, we saw a wonderful sight in Mr. Moffat's splendid herd of pedigree and non-pedigree Shorthorn cows, which may be equalled, but would be very difficult to beat, anywhere in the British Isles.

As organiser of the Conference, may I again thank Mr. Thornborrow and Mr. Robb for their great help and sound advice; Mr. Robb's School at Newton Rigg strikes one as the ideal of what a practical farm school should be. Lastly, as Chairman, may I thank the members of the Conference for their loyal support throughout. We were, I think, a very happy party, and the Conference will ever be a proud and pleasant memory to me.

BACON PIGS, BACON AND HAMS— DAIRY SHOWS, 1923-4.

By W. J. GRANT.

It is both instructive and gratifying to find that each year in this most important section of the Dairy Show an increased interest is being taken, not only by the breeders of pigs, but also by the general public who visit the Dairy Show. Since the classes initiated in the first instance by Mr. S. R. Whitley in 1921 for pigs that would be fed by the exhibitors, but killed and cured at one place, at the same time and under precisely the same conditions, to be afterwards judged as bacon at the Dairy Show.

In the first instance there was one class for six animals of one pure breed of pigs, the societies representing the various herds making the selection of the animals to compete from one or more breeds to be cured and afterwards to be judged on their merits as bacon that would be best suited for the London and South of England market, the best 12 sides being awarded the much coveted and highly appreciated award of the Whitley Cup Trophy, that is now competed for each year.

The next departure made in 1922, for the purpose of impressing upon pig farmers and breeders the whole and very full truth of the fact, which though it is a very simple one, but not always realized in the Show Yard, that "Pigs is Bacon." For this reason the Show Committee created a class for two animals of any pure breed, under the same conditions and regulations as those under which the class for six animals are carried out. This extension of what is proving to be a very thorough and real object lesson is more than justified by the results. There were 14 entries the first year, 23 the next, and 20 for this class in 1924, for which there is every reason for saying that there would have been a larger entry had it not been for the outbreak of Foot and Mouth Disease, which prevented many from entering, and others from sending animals they had entered. Captain B. P. Beale, M.C., for the 1924 Dairy Show placed a Challenge Cup at the disposal of the Council, to be awarded each year to the exhibitor of the pigs producing the four best sides of bacon in this Class (83).

In 1923 it was felt that there was yet room and necessity for something more to be done, therefore it was decided to create a class for two pigs that would be the result of a cross between any two pure breeds, or, in other words, a first cross. Lord Bledisloe not only urged the importance and value of this further departure, but backed his opinion by giving a Challenge Cup to be competed for each year in

this class. The excellency of the animals that competed in this class, and the uniform quality of the bacon is the best possible testimony as to the value of a first cross for producing a first-class bacon pig.

The value and importance of these classes cannot be estimated too highly, they are a practical object lesson to both the breeders of pigs and those—and they are many—who feed, but do not breed; and what is to-day of far-reaching importance, many thousands of our country men and women have had an opportunity of seeing with their own eyes that the best bacon in the world *can* be produced in their own country, but the pity of it is, that so many of those who at the last Dairy Show, 1924, saw the finest exhibit of bacon that has probably ever taken place in England, did not avail themselves of the opportunity of purchasing some of the bacon exhibited, as they had the opportunity of doing. I would, if I may do so, suggest that some means should be devised that would enable people to join together and purchase as many sides of bacon that they might require at the auction sale, on the understanding that their purchase or purchases would after the sale be cut for division in the best and most advantageous manner for everyone who purchased.

The three classes that have been created for London and the South of England—that is, bacon cured in the Wiltshire fashion—have both justified themselves and have come to stay, and rightly so; but it must, however, be borne in mind that the type of bacon, both as to the weight and amount of fat in the sides required in the North Midlands and the North of England, means that the curers of bacon in these parts of England require larger pigs than the animals for which there is a demand, and an increasing one, in the South. This is a matter that should be seriously considered both by the breeders and feeders of pigs with the bacon curers in the parts of the country I have indicated. If this is done, I feel sure that the Council of the British Dairy Farmers' Association would give very careful consideration to any suggestions that would be placed before them.

It will be of interest, and perhaps an advantage to those interested or engaged in pig farming, to notice the live, dead, and bacon weights, with age, in the statistics given for the animals killed, cured and exhibited in 1923 and 1924. In 1923 any pig farrowed on or after 1st January of that year could compete, but in 1924, the pigs competing had to be farrowed on or after 1st March, 1924.

Although there were fewer sides affected with seedy cut last year—there being hardly a single instance—it is decided that in future, in each class, one half of the animals competing shall be of each sex.

I received, on behalf of the British Dairy Farmers' Council, the pigs at Calne in September, 1923 and 1924, and saw the animals weighed before and after being killed, and their preparation for curing, before being dried, and in thanking Messrs. C. & T. Harris, Calne, Ltd., for

the most courteous and painstaking way in which they carried out the whole of the work, from the arrival of the animals at Calne to the delivery of the bacon at the Agricultural Hall, Islington, I take this opportunity of assuring those to whom the general public ought, and I hope are, much indebted for their fine sporting spirit and example in supporting these new classes, that from start to finish nothing was left undone to make every exhibit to deserve success.

In addition to their valuable services in this direction, Messrs. Harris & Co. have also generously presented a handsome Challenge Cup, to be awarded to the exhibitor of the four best sides of Wiltshire Bacon in any one entry on the Classes 82, 83 and 84, to be competed for annually under the conditions settled from time to time by the Council of the British Dairy Farmers' Association, who will present the Silver Medal of the Association to each year's winner of the Cup.

The following particulars give an accurate tabulated statement of facts relating to the age, live, dead and bacon weights with percentage loss from live to dead weight, and from live weight to bacon weight of the 78 pigs dealt with in September for the 1923 Dairy Show—marked A.

The particulars for the 74 pigs dealt with in September for the 1924 Dairy Show are marked B.

The trade exhibits of bacon and hams in 1923 and 1924 were excellent—that of 1924 being the better of the two—the majority of both the bacon and hams exhibited being as near as possible in that finish and quality which would appeal to the town customer, who would demand and require a first-class article.

The Colonial exhibits at the 1924 Dairy Show were far and away the best ever shown in the Gilbey Hall. May one venture to suggest that our enterprising kinsmen in the Colonies have in their wisdom availed themselves, and made good use of all they could learn in the Old Country? In welcoming their wisdom, we would say "more power to their elbow."

As one who has had some little experience in the curing and management of home-cured bacon and hams, I much regret that the class for hams cured at a farm-house had to be discontinued owing to the lack of entries. May I appeal to those who know full well that the best bacon and hams always have and always will be made in a farm-house, to lend a helping hand for the restoration of the class for farm-house hams; and for what to-day is of even more importance, a class for REAL home-cured bacon from pigs bred, fed, and cured by the small occupier, who deserves encouragement, and should have in his kitchen something of his own production that will provide a more than acceptable meal from one year's end to another. No words of mine can emphasize with sufficient force the value and importance, from every point of view, that all those who can possibly do so should feed their own pigs, and bake all the bread their family eat.

TABLE A.

Exhibitor's Name.	Entry No.	No. of Pigs.	Breed	Average Age.	Average Live Weight.	Live Weight.	Dead Weight.	Percentage Loss, Live Weight to Dead Weight.	Bacon Weight.	Percentage Loss, Live Weight to Bacon Weight.	Awards.
CLASS 82.											
British Berkshire Pig Society ...	1111	6	Berkshire ...	8	11	243	1,463	16.6	949	35.1	Whitley Cup.
Large Black Pig Society ...	1112	6	Large Black ...	6	0	212	1,274	22.9	719	43.5	
Gloucestershire Old Spots Pig Society	1113	6	Glos. Old Spots ...	5	20	214	1,289	20.0	766	40.5	
Large White Lop-eared Pig Society	1114	6	Long White Lop-eared	7	0	187	1,122	23.3	647	42.3	Reserve and V.H.C.
Essex Pig Society ...	1116	6	Essex ...	8	19	250	1,502	19.3	908	39.5	
Wessex Saddleback Society ...	1115	6	Wessex Saddleback ...	5	8	227	1,363	25.9	730	46.4	
CLASS 83.											
Lord Sherborne ...	1117	2	Glos. Old Spots ...	8	20	240	480	21.0	279	41.8	Bronze Medal.
S. F. Edge's Pig Farms, Ltd.	1118	2	Berkshire ...	6	20	195½	391	20.4	232	40.6	
Bennett & Howard ...	1120	2	Glos. Old Spots ...	8	21	240	480	21.0	286	40.4	
R. Browning Smith ...	1121	2	Essex ...	8	14	203½	407	19.1	249	38.8	
S. F. Edge's Pig Farms, Ltd.	1122	2	Large White ...	8	13	310½	621	49.5	378	39.1	
A. H. Radcliffe ...	1123	2	Glos. Old Spots ...	8	17	292	584	19.1	352	39.7	
W. White & Sons ...	1124	2	Large White ...	6	9	202	404	22.5	232	42.5	
Awebridge & Co., Ltd.	1125	2	Wessex Saddleback ...	5	21	235	470	22.3	263	44.0	
R. H. Hole ...	1127	2	Glos. Old Spot ...	7	22	227	454	22.2	253	44.2	
Lord Sherborne ...	1128	2	Glos. Old Spot ...	8	20	269½	559	20.2	317	41.1	
E. H. Sikes ...	1129	2	Essex ...	8	19	303½	607	19.2	370	39.0	
R. Browning Smith ...	1130	2	Essex ...	8	17	206	412	21.1	246	40.2	
E. Barnclough ...	1131	2	Essex ...	8	17	218	436	21.7	255	41.5	
R. T. Langridge ...	1132	2	Glos. Old Spots ...	6	24	204½	409	24.2	223	45.4	

TABLE A—Continued.

Exhibitor's Name.	Entry No.	No. of Pigs.	Breed.	Average Age.		Average Live Weight.	Live Weight.	Dead Weight.	Per-centage Loss, Live Weight to Dead Weight.	Bacon Weight.	Per-centage Loss, Live Weight to Bacon Weight.	Awards.	
CLASS 83—Continued.													
S. F. Edge's Pig Farms, Ltd.	1133	2	Large Black	...	8	233	466	367	21.2	271	41.8	Silver Medal.	
W. White & Sons	1134	2	Large White	...	6	236	472	369	21.8	279	40.9		
J. Pierpont Morgan	1119	2	Large White	...	7	235	470	365	22.3	268	42.9		
W. Brooks & Sons	1136	2	Large Black	...	6	0	185½	371	295	20.4	220		40.7
J. Clarke	1126	2	Middle White	...	8	208	416	318	23.5	237	43.0		
CLASS 84.													
Captain B. P. Beale, M.C.	1138	2	Middle White and Berkshire	8	20	259	518	425	17.9	337	34.9	Reserve.	
Lord Bledisloe, K.B.E.	1137	2	Middle White and Large Black	6	3	195	390	305	21.7	232	40.5	Bledisloe Cup.	

TABLE B.

CLASS 82.												
Essex Pig Society	1056	6	Essex	6	19	150.3	938	735	21.6	549	41.4	R., & R. for Whitley Cup. Whitley Cup and Harris Cup. V.H.C. H.C.
Wessex Saddleback Pig Society	1057	6	Wessex Saddleback	6	18	209.6	1,258	993	21.0	750	40.3	
British Berkshire Pig Society	1058	6	Berkshire	6	21	192.3	1,154	914	20.7	707	38.7	
Long White Lop-eared Pig Society	1059	6	Long White Lop-eared	6	14	186.1	1,117	862	22.8	641	42.6	
Large Black Pig Society	1060	6	Large Black	6	22	179.0	1,074	851	20.7	631	41.2	

TABLE B—*Continued.*

Exhibitor's Name.	Entry No.	No. of Pigs.	Breed.	Average Age.	Average Live Weight.	Live Weight.	Dead Weight.	Per-centage Live Weight to Dead Weight.	Per-centage Live Weight to Bacon Weight.	Awards.
CLASS 83.										
Major-General R. L. Mullens, C.B.	1061	2	Large White	6	221.5	403	316	10.5	10.5	Beale Cup
Major J. A. Morrison, D.S.O.	1062	2	Berkshire	6	166.0	332	254	23.4	244	
Captain H. E. F. de Trafford	1063	2	Middle White	6	189.5	339	270	20.3	190	
James Ismay	1064	2	Berkshire	6	200.0	400	323	19.2	208	
George J. Harris	1066	2	Large White	6	235.5	471	376	20.1	254	
J. Stanley Corby	1067	2	Large White	6	286.5	573	453	20.9	290	H.C.
Miss G. O. Collins	1068	2	Middle White	6	176.0	352	269	23.5	355	R., & R. Beale Cup.
W. White & Sons	1069	2	Large White	6	218.5	437	345	21.0	258	
Frank Bennett	1071	2	Long White Lop-eared	6	200.5	401	313	21.9	231	
S. F. Edge's Pig Farms, Ltd.	1073	2	Middle White	6	206.5	413	336	18.6	270	
Bennett & Howard	1074	2	Glos. Old Spot	5	182.5	365	287	21.3	212	
Shaw Porter	1075	2	Middle White	6	184.5	369	288	21.9	210	
George J. Harris	1076	2	Large White	6	263.5	527	419	20.4	318	
W. White & Sons	1078	2	Large White	6	199.5	399	309	22.5	231	
Standen Estates, Ltd.	1080	2	Large White	5	182.5	365	284	22.1	214	
CLASS 84.										
Lord Bledisloe, K.B.E.	1081	2	Middle White and Large Black	6	197.5	395	299	24.3	225	
Major-General R. L. Mullens, C.B.	1082	2	Middle White and Berks	6	192.5	385	298	22.5	225	Bledisloe Cup and R. Harris Cup.
Captain B. P. Beale, M.C.	1083	2	Large White and Berks	6	176.0	352	268	23.8	197	
James Ismay	1084	2	Large White and Berks	6	186.5	373	300	19.5	234	
S. F. Edge's Pig Farms, Ltd.	1086	2	Middle White and Large Black	6	194.0	388	303	21.9	230	V.H.C.
Reginald T. Harris	1087	2	Large White and Wessex	6	225.0	450	349	22.4	256	R., & R. Bledisloe Cup
Lord Bledisloe, K.B.E.	1088	2	Large White and Large Black	6	222.5	445	335	24.7	250	

ANNUAL REPORT OF THE CONSULTING CHEMIST,

T. J. DRAKELEY, Ph.D., M.Sc., F.I.C., F.C.S.

THE number of samples submitted by the members for examination during the past year has been small, and only totalled 80. The samples have been mostly milk samples for routine analysis, although a more varied selection has been received than last year. The analyses gave results which were in no way exceptional, and, therefore, call for no special comment in this report. Members have, however, asked for information upon numerous topics in connection with dairy products.

DIRT IN MILK.

Probably the problem around which most interest has centred, is the question of dirt in milk.

The amount of sediment in milk cannot be accepted as a criterion of the wholesomeness of the sample. It frequently happens that a sample of milk giving an appreciable sediment contains no bacteria of a harmful nature, whereas it is quite possible for milk yielding little sediment to be condemned owing to the type of bacteria present.

Naturally, milk producers should take every precaution to ensure that their milk is absolutely as clean as possible, and whilst it is gratifying to say that most farmers do take all possible care, some, however, certainly do not exercise sufficient supervision to maintain that necessary cleanliness.

Efforts made at the farm are, however, useless proper transit is provided whereby dust and other sedimentary matter are excluded from contaminating the milk during the subsequent handling.

The determination of the amount of dirt in milk gives in *one* experimenter's hands a relative gauge of the care taken in the production of the milk.

Furthermore, there is, at present, no accepted method of determining the sediment, and the accuracy of the analytical examinations is so uncertain that widely varying results may be obtained by *different* experimenters. Consequently, there has never been a serious and definite instruction that the determination of the dirt in milk shall be a standard test in its municipal inspection, and as Parliament has never set up a fixed standard for extraneous matter in milk, prosecutions on this basis are of a particularly perplexing character to farmers.

It is certainly time the Ministry took some action in this matter, for magistrates in one area may now convict for a certain amount of sediment, and in another area worse cases may be dismissed.

An examination for dirt in milk is desirable, and of value in indicating the care taken in production, but, at the present state of our knowledge, it does not seem to the writer to be a suitable method for the purpose of controlling or testing the public milk supply.

THE DAIRY SHOW OF 1924.

By SAMUEL R. WHITLEY.

THE 1924 Dairy Show (October 21st, 22nd, 23rd, and 24th) was again a source of considerable anxiety to the Council, as the Agricultural Hall, Islington, was within an area scheduled for Foot and Mouth Disease until a week or two before the Show, and for a long time it was doubtful whether cattle would be permitted to enter this area. In consequence of this it was necessary to begin arrangements for using the space in case cattle had been prohibited. Fortunately the area was clear of the dreaded disease in time, and the Dairy Show was held as usual.

The total entries were much the same as the record year of 1923, but the all-important cattle entries showed a slight decrease (viz., 473 against 539), which is hardly to be wondered at, as considerable areas would not promise to re-admit cattle which had attended the Show.

While the cattle entries were slightly less, the number actually present showed a considerable increase on the 1923 Show, when about 140 were prevented from attending, as they were found to be in scheduled areas.

Again the Agricultural Hall was stretched to its utmost limits, and it was a great disappointment that the Hall Company had not been able to carry out their promise to add a gallery to the Gilbey Hall and so to relieve the pressure to some extent.

More stringent fire regulations enforced by the London County Council added to the difficulties of running the Show and necessitated certain portions being closed during the afternoon of the last day.

The public did not visit the Show in such large numbers as they have been wont to do—a considerable drop in the gate-money can probably be accounted for by the fact that the country was in the throes of a General Election and so could get free amusement and sufficient hot air without travelling to the Show. Previous visits to the British Empire Exhibition at Wembley would cause many customary visitors to the Dairy Show to stay at home, and the Motor Show at Olympia during the same week may have had some effect on the attendance at the Dairy Show.

In spite of the above drawbacks one could feel that there is a great throbbing life in the Dairy Industry and a great determination to get on with the improvements in every section of the Show.

Apparatus for Bottling Milk was very much to the fore, and it was evident that the experts who were saying a few years back that Bottled Milk in this country was a commercial failure, had missed

the mark. Stories were told how unofficial bottling is sometimes done in the street under insanitary conditions, and a general desire to put a stop to such practices was frequently expressed, as it was felt by all thinking people that this is seriously damaging the fair name of an excellent product.

Again, the Ministry of Agriculture, assisted the National Institute for Research in Dairying to give demonstrations in the production of High Grade Milk, and these were one of the centres of special attraction, being visited by several doctors, who were loud in their praise and expressed themselves as desirous of advocating increased consumption of Milk produced and handled under such conditions.

For the second time the rules allowed only cows belonging to official Milk Recording Societies, and some tightening up of this rule was frequently talked of. Another subject of discussion was the proposal that only cows which have shown evidence of freedom from Tuberculosis should be eligible to compete at the Dairy Show, but at this Show no action was taken in this direction.

The class for Thrice-Milked Cows was repeated and given both Inspection and Milking Trial Prizes, but it was felt necessary again to exclude such cows from competition for the general run of Milking Trial and Butter Test Trophies. There seemed to be a growing opinion that it pays to milk cows giving six gallons and over more than twice a day, and present regulations will probably need alteration at no distant date.

The President, Major Morrison, D.S.O., generously added a handsome Trophy, value 100 guineas, for the cow exhibited at three consecutive Dairy Shows, gaining the greatest number of points (at the three Shows) in the Milking Trials, Butter Tests, and Inspection. This was won by Mr. Holt Thomas's British Friesian cow "Blackmore Ena 2nd," with Reserve to Mr. D. Aldridge's Dairy Shorthorn cow "Merry Maid 5th."

CATTLE.

Class 1.—Pedigree Dairy Shorthorn Cows (born previous to August 1st, 1919), with 24 entries and a fair proportion present, was not an outstanding class. The first, second and reserve and extra-inspection prizes were all won by Mr. D. Aldridge, all being bred by Mr. J. Moffat.

Class 2.—Pedigree Dairy Shorthorn Cows (born after August 1st, 1919, and previous to August 1st, 1921), with 19 entries and 11 present, was considered the strongest class in this section, the winner, Mr. Ezra's "Thurnham Ringlet 14th," being outstanding.

Class 3.—Pedigree Shorthorn Heifers, with 23 entries, but only six present, was disappointing in quality, though the winner, Mr. R. Tustian's "Greattew Swanne," is described as a sweet heifer with promising udder.

Class 4.—Non-Pedigree Dairy Shorthorn Cows, brought 27 entries, with 15 present, and was a fairly good one, with the first and second prize-winners of outstanding merit.

Class 5.—Non-Pedigree Dairy Shorthorn Heifers, with 11 entries and only two present, was very disappointing.

Class 6.—Lincoln Red Shorthorn Cows, with 20 entries, and a good proportion present, was one of the outstanding classes of the Show, being a considerable improvement on some recent years both in quantity and quality. Good Dairy qualities were especially noticeable in the winners.

Class 7.—Lincoln Red Shorthorn Heifers, with 16 entries, again was a very strong class; first and second prizes were won by Mr. S. Reading with animals by the same sire and similar breeding.

Classes 8, 9, and 10.—British Friesian Cattle made the best show they have yet done in London. Without exception all the females exhibited carried good vessels, that promised milk, and in nearly all cases were of good shape, with teats well placed.

The Mature Cow class was headed by Mr. Holt Thomas's "Beccles Peggoty," which, though only twice milked, gave the splendid yield of $8\frac{1}{2}$ gallons.

The best class was the one for Young Cows, but all three classes were well up to the Standard, and were of great merit.

Foot and Mouth Disease prevented any of the four entries in the South Devon Cow Class from putting in an appearance.

The same cause prevented six of the nine entries in the Devon Cow Class from being present, but the three on view were deserving of considerable attention, showing good milking qualities combined with aptitude to fatten.

In the Red Poll Classes there was a greater number of essentially Dairy animals than in any former year, and the prizes were awarded to those specially showing Dairy characteristics. In the older class, of ten entries, seven were paraded, and 1st prize awarded to the President's "Basildon Rosalind," a pretty easy winner on account of showing such excellent Dairy properties. She also won the £5 Extra Inspection prize for the best cow giving a minimum of 9,000 lbs. for the last lactation period of 45 weeks.

In the Younger Cow Class, ten out of the 13 entries were paraded, and the first three prizewinners showed their Dairy properties to a marked degree.

The Heifer Class consisted of 18 entries, with nine only coming forward. The first two were from Mr. Dimmock's herd, and sired by the same bull.

As last year, the Blue Albions were unfortunate owing to the havoc wrought by Foot and Mouth Disease. A good entry of 15 cows was made, but only six of these were able to reach the Show, and owing to a fresh outbreak in their district five of these had to be removed from the Show on orders from the Ministry of Agriculture. However, as this removal did not take place before Monday evening, it was just possible to judge them for Inspection Milking Trials and the Butter Tests. In the Milking Trials and Butter Tests they acquitted themselves very well considering that this breed is a newcomer to the

Dairy Show. Some of them showed exceptionally high percentages of Butter Fat, winning second and third in their class of "Other Breeds" in the Butter Tests, and the six animals stood fourth for the Bledisloe Breed Trophy.

The Welsh Black Cows failed to put in an appearance for the second time.

Ayrshires having won the Bledisloe Trophy last year evidently intended to take it back with them to Scotland, for the animals shown were turned out in the pink of perfection—Dairy Animals all over—and eventually the Bledisloe Trophy was again awarded to them. It was not for nothing that the Scotchmen began Milk Recording Societies several years before their English brother dairy farmers, and one heard many expressions of admiration, even from non-patrons of the Breed. The Judge considered the cows shown as typical of their Breed, and in every way big, upstanding commercial cows, with the Heifers also promising well.

The three classes for Guernseys were fairly good on the whole, but the Judge thinks that the best Show cows are not forthcoming at the Dairy Show; their records in the Milking Trials were not very impressive, and the winner in the Younger Cow Class beat all the older cows.

Jerseys were as popular and numerous as ever, but the classification was altered from previous years.

A Young Cow Class taking the place of the Second Heifer (bred in the Island) Class, thus bringing the Breed more into line with other Breeds at this Show. The Judge was of the opinion that the standard of excellence was much higher than has been seen there for many years. The entries throughout were large, with a very good proportion parading, and the quality excellent. In the Milking Trial points also they acquitted themselves well, being many points above the Guernseys, and this year the Jerseys won both the National Butter Challenge Cup and the National Milk Challenge Cup for the greatest number of points gained in the Butter Tests and Milking Trials per 1,000 lbs. of live weight.

The classes for Kerry Cows and Heifers brought fair entries, but many of the exhibits were far from typical of the breed.

The two Dexter Classes were almost a wash-out on account of Foot and Mouth Disease, there being none present in the Cow Class and only two in the Heifer Class.

The class for Cows of any Breed (to be milked three times in the day brought five entries, viz., four British Friesians and one Short-horn, of which three were present. The winner in the Milking Trials made the good score of 159.9 points, just beating the winning Ayrshire Cow (twice milked) which scored 158.3 points.

BULLS.

Bulls at the Dairy Show are only eligible if their dams and sires' dams have won a prize or commendation in the Milking Trials or a

certificate of merit in the Butter Tests of this, or other approved society, or their dams and sires' dams must have an official record of 6,000 lbs. as heifers or 8,000 lbs. as cows.

The class for older Dairy Shorthorn Bulls had seven entries, with five present, and was headed by the Royal Champion for two years ("Bessborough Polonius"). The class for Younger Shorthorn Bulls, with 15 entries and 13 present, was a particularly strong one.

The class for Jersey Bulls was not very large in number, but the quality and type were splendid.

Friesian Bulls, although a small class, were very representative of the breed, and all had considerable Show-yard honours to their credit.

GOATS.

The goats were again stalled at the top of the Main Hall, close to the Liverpool Street entrance; this and the new stalls seem to have given general satisfaction.

The entries were as follows:—Milking Classes, 33; Inspection Classes, 69; Recorded Class, 21; Total, 123. Whereas in 1923 the corresponding figures were: Milking Classes, 31; Inspection Classes, 66; Recorded Class, 15. Total, 112.

There were 72 goats entered, of which 56 were actually present at the Show, while at least six of the 16 absentees were away due to Foot and Mouth Disease regulations. The quality of the animals was excellent, the outstanding goat being Mrs. Maurice's "Centra Pepita" Q*Q*Q*, which gained first in her class for Inspection and headed all the goats on re-Inspection, thereby qualifying for the Challenge Certificate, and the Ten Guinea Challenge Cup, whilst in the Milking Trials she obtained the highest points of any competitor, 29.59, her yield being 11.25 lbs. of milk, with butter fat 5.03 per cent. a.m. and 5.56 per cent. p.m. This goat thus won the 1st prize in her class, the Dual-purpose Challenge Certificate, the Baroness Burdett Coutts' Cup, the Tremedda Selene Cup, and the Dewar Trophy.

Some of the certified Milk yields in the Recorded Class are extraordinary, viz., 4,125½ lbs. in 362 days; 4,089½ lbs. in 307 days; 3,676½ lbs. in 362 days, and 3,170 lbs. in 348 days. The Judge, however, was not quite satisfied with this class, stating that it was most difficult to adjudicate upon.

A full Statement and Tables will be found after the Report on the Milking Trials.

CHEESE.

The total entries were practically the same as last year, *i.e.*, double what they were in 1911. The available space remained about the same, and so double tiering had to be almost universal. This and specially stringent regulations about the storage of empties made the unpacking and packing up very difficult, but it was accomplished in reasonable time.

Stillons (six cheeses).—In a large entry (25) there was rather a mixed assortment, and the prize-winning lots were good without

being outstanding. They were soft and full of quality but uneven in flavour. Throughout the whole class a bitter flavour was present in many of the cheeses, which may be accounted for by the cold wet season.

The Class for 18 Cheeses contained the best lot of Stiltons in the Hall. This, the 1st Prize lot, was ideal and typical of what a good Stilton should be, clean in flavour, exceedingly well "blued," and white in colour with a soft creamy texture. There were a few other good lots in this larger class, but again the flavour and colour in many of them was very poor.

Cheddar Truckles and Cheddars.—The Judge reports the exhibits generally as only of average excellence—very few of outstanding merit, and many lots showing loose in cut—as if badly pressed. The prize-winning lots in Classes 51 and 52 run each other very closely. The N.K.J. Cup was won by the 1st prize lot in Class 53 (12 cheeses), which was a very good exhibit. There was the usual keen competition between Scotland and the West of England. The West seems to have taken the honours in the Truckle Class, while Scotland had ample revenge in the larger classes.

Colonial Cheddars.—The 20 entries were drawn from New Zealand, seven; Ontario, six; South Australia, two; Victoria, two; South Africa, two; and East Africa, one. The exhibits were very irregular in quality and their colour was not true; in general a disappointing exhibit. The texture and colour of the New Zealand Cheese may have been a trifle better than that of the others, but the damaged condition of the cheese was such that it was impossible to award a prize, and all three prizes eventually went to Ontario.

Cheshire Cheese.—The Cheshire Cheese exhibits were one of the chief features of the Show. There were 111 entries, representing 692 Cheeses, approximately 20 tons, which is a record. In 1920 there were only 36 entries and 240 cheeses. During the evil days of food control, Cheshire Cheese could not be sent south of Rugby, which damaged the London trade in Cheshire Cheese, but there are clear indications that it is now regaining its position in London and the South. The exhibits of Prize Dairies found a ready sale, and the demand was in excess of supply. The general standard of quality showed considerable advance. The first prize and Champion Cheshire Cheese exhibit was in the 12 Cheese Class, and consisted of an exceptionally fine lot, showing plenty of substance and quality of a silky texture and fine nutty flavour. This applies to all the prize lots, and especially to the winner in Class 56 for four Coloured Cheeses, which was Reserve Champion. It is interesting to note that these two Dairies were placed in the same order on the same day at Chester Dairy Show. The get-up of the exhibits was excellent and reflected great credit on the skill and industry of the Exhibitors.

Class 59 for Factory Cheese of any variety was a very strong one, with 21 entries of 10 Cheeses each. This class improves year by year, and this year the English exhibits were really superior. Most of the

Cheeses being perfect in flavour, correct in texture, and generally well made and finished. The 1st Prize lot were almost perfect and as good, if not better than many of the Prize Cheeses in Class 52 (four Cheddars), which usually contains the cream of the best English and Scottish Dairies. The Scottish exhibits in this class were not so good as usual, whereas in the past the entries from Scotland have usually carried off the principal prizes, but this year the flavour was poor and the cheeses stiff and light in texture.

Class 60 Leicesters (4 Cheeses).—The standard of quality was perhaps a little higher than usual.

The 1st Prize-winning exhibit contained some nice Cheeses, in good condition, uniform in colour and typical of what a Leicester Cheese should be. The 2nd Prize lot was also good but lacking fine flavour and rather pale in colour. The 3rd Prize should have been higher, except that one Cheese was discoloured. Other entries in this class were fair but mottled in colour, which is a drawback.

Class 61. Lancashire (four Cheeses).—The Cheeses throughout were typically Lancashire, showing the fine flakey texture and desired toasting qualities, together with the mild creamy flavour, particularly in the Prize lots. Some of the other exhibits suffered through lack of uniformity—one of the four Cheeses being defective in flavour or texture.

Class 62. Derby (four uncoloured Cheeses).—There was nothing particularly good in this class, but 1st Prize went to a nice clean Cheese, which rather inclined to the Cheddar type. The other lots in this class were only fair, and some Cheeses possessed the "factory taint," which is most undesirable.

Class 63. Double Gloster (four Cheeses).—In this class were many excellent samples, the first and second lots running very close. Several exhibits were more like Lancashire than Gloster in texture, being free and open, not close and buttery as desired. The Judge suggests that makers should endeavour to keep their Cheeses true to type.

Class 64. Single Gloster (four Cheeses) contained many excellent samples, all true to type with regard to texture. The flavour varied considerably, one or two lots, which otherwise might have been in the list of winners, being off flavour.

Class 65. Caerphilly (four Cheeses).—This class as a whole was a poor one, only the prize-winners being of any merit. The cheeses were not uniform in character, some more of the Cheddar type, and those of the Caerphilly texture were inclined to bitterness. The Judge considers there is great room for improvement in the making of Caerphilly Cheese.

Class 66. Wensleydale (blue moulded) (six Cheeses).—Excepting the three prize lots this class contained only moderate samples. The 1st and 2nd Prize Cheese were excellent, the second being rather behind the first in quality and texture; both were quite blue.

Classes 67 and 69. Smallholder Pressed Cheese of large and small variety (quick ripening).—The prize-winners in the above classes were

of very good quality. The other exhibits were faulty in flavour and lacked body.

Classes 68 and 70. Smallholder Pressed Cheese of large and small variety (long keeping).—In the larger variety (class 68) the whole of the entries were well above the average, most of them showing good flavour, but in some the texture was pasty and soapy. The exhibits gaining awards and commendation were extremely good and close together as regards number of points gained.

In the smaller variety (class 70) the entries were not so good with the exception of the first two prize-winners, which were very good indeed and well above the average standard.

Classes 71 and 72. Small Cheddars and Small Cheshires (two Cheeses from 8-10 lbs. each, made at home, open to pupils who have attended County Travelling Cheese Schools during 1923 and 1924).—The Small Cheddars were undoubtedly the best and showed cheese true to type. This was a strong class, and the produce sent up for competition was good. The entries for Small Cheshires were disappointing, and some of the cheeses forwarded for this class were not true Cheshires, either in flavour or texture, which barred them from the Prize List.

Unfortunately, the Cheeses adjudged 1st Prize were later disqualified owing to being over weight.

These classes, designed to encourage the economic manufacture of small quantities of Milk in the home, are worthy of better support. In the Cheddar Class the results showed that each competitor had taken full advantage of the Instruction given, but in the Cheshire Class only those who were mentioned, had grasped the underlying principles of the manufacture of that particular variety of Cheese.

In the *Inter-County Competition (Class 73)* for the best collection of Smallholder Cheese made by persons who have received Instruction in Cheese-making at a County Council School during 1921-1924 there were only two entries, both containing very good Exhibits. Berkshire was the winning county.

Class 74. Cream Cheese (made from pure Cream only).—Taken as a whole the entries in this class (numbering 21) were not uniform, and the quality and flavour of the exhibits was by no means up to the high standard one expects to find at the Dairy Show, and the only ones coming near to perfection gained awards.

Class 75. Unripened Soft Cheese (other than Cream Cheese) brought 18 entries, many of which were too soft and unfinished, with flavour either weak or bitter. Only those gaining awards were up to standard.

Class 76. Collection of Produce (open to Women's Institutes—to consist of 2 lbs. of fresh Butter, 1 Smallholder pressed Cheese, not over 4 lbs. of any variety, $\frac{1}{2}$ lb. of cream, raw or scald, and 2 doz. eggs. The Collection to be packed in a box suitable for transit by Parcel Post. Total weight of package not to exceed 11 lbs. Packages to be taken into consideration when making Awards).—This was a new class which brought eight entries, and the Exhibits were very good and well packed, arriving in good condition. The Judge considered it an excellent competition,

showing how the farmer can reach his customers in the town per parcel post. Unfortunately, many of the packets had to be rejected on account of being over 11 lbs., due in most cases to using too heavy wooden packing cases.

BACON AND HAMS.

But for the new kind of Bacon competition where the pigs and their breeding get some of the credit, the exhibition of Bacon would have been a poor one as two classes had to be cancelled for want of entries, and the other three classes of Bacon had only five and six entries. The Judges speak highly of the exhibits in these classes that put in an appearance.

The classes for Hams were better filled and produced excellent quality, but the class for Women's Institutes and the one for Farm-house Curing, both had to be cancelled for lack of entries.

A full description of the new classes when the pigs themselves are judged from the resulting Bacon will be found elsewhere in this Journal, but it may here be noted (1) that the British Berkshires were again successful in the Inter-Breed Class with 12 sides, which the Judges considered well nigh perfect; (2) that the Reserve in this class (the Wessex Saddlebacks) would appear to be a very different kind of pig; (3) that March 1st was the earliest farrowing date for these pigs, so that only 6½ months was allowed for raising them; (4) that in the Pure-bred Class for individuals the Large White Breed took all the honours; (5) that in the "First Cross" Class, the Middle White, Large White Cross was first, with the Large White—Large Black Cross as Reserve; (6) that the British Dairy Farmers' Association is greatly indebted to Messrs. Harris, of Calne, for the great interest and trouble taken by them to ensure the success of these competitions; (7) that the dreaded Seedy Cut was not found at all on this occasion.

Most of the sides were cut from Hog Pigs.

BUTTER.

The total entries of Butter were 483, a considerable increase on those of 1923 and other post-war Shows. This number is practically identical with that of 1911, but still considerably short of the record years, 1912 and 1913.

The Two-Pound Classes were well patronised throughout and the competition keen.

The prize-winners are generally reported as well up to the standard, but the flavour and texture in the remainder were often faulty, and there was great variation in colour; too much moisture being found in several cases.

The Classes for Ornamental Butter brought more entries than usual, and were a source of considerable attraction to the public.

The Commercial Butter Classes (99 to 103) contained a very fine selection of Butters, with considerably increased entries. Prize-winners were exceptionally fine, and the Judge specially mentions that he has never wished to see a better lot of Irish Creamery Butters.

This is particularly encouraging, as in recent years they have been a very poor lot.

The Judges report that the flavour and texture of the Colonial Butter reached a very high standard, though both considered the colour too "high" or too "deep" for the London trade. There were 79 entries in the Class for "Salted Butter," 10 coming from South Australia, one from South Africa, 24 from New South Wales, two from New Zealand, 14 from Queensland, 24 from Victoria, and four from Ontario. South Australia carried off first prize along with many commendations, and New South Wales received second prize and also many commendations; Queensland being third.

In the Colonial Class for Unsalted Butter there were 66 entries; nine coming from South Australia, one from South Africa, 14 from Queensland, 21 from New South Wales, 19 from Victoria, and two from Ontario. In this class New South Wales carried off first honours and Queensland second prize, and Victoria third prize.

Clotted Cream brought 12 entries, of which the prize-winners were distinctly good but several lots, while good in colour and appearance had gone off in flavour.

Cream, other than clotted, brought 18 entries, several apparently from "town" Dairies, one of which secured second prize. They were a good all-round lot and very difficult to judge owing to so many excellent samples.

BOTTLED FRUITS.

The number of entries generally were just adequate, and the quality of the exhibits really excellent, being well in advance of previous years; the grading, packing, and colour being very fine.

In the various classes for Bottled Fruits and Vegetables, the Horticultural College, Swanley, well nigh swept the deck of premier honours.

The Class for Womens' Institutes shows great improvement, and the interest aroused was considerable.

HONEY.

The Honey produced at the Show was good, but, owing to the inclement season, not up to the average.

The sections were not well filled out and of poor colour.

The Extracted Honey also suffered from the inclement season, much being taken from unripe comb.

The Granulated Honey was very good, with a few exceptions.

The exhibits of Wax were distinctly good and very difficult to judge.

ROOTS.

Perhaps the most wonderful collection of Roots ever presented to the public. Evidently what is bad for Honey and certain other products is good for Roots, and so the farmer must keep on smiling.

The Judge considered that the Exhibitors generally had paid

too much attention to "quantity" and too little to "quality," size is not everything.

The Mangolds were exceptionally fine, but some cut badly. Swedes and Turnips were wonderful, but again often lacking in quality. The Cabbage were rather disappointing, being short of solidity.

The collection of Roots, &c., was one of the outstanding features of the Show and made a grand display; especially is the winner of the 1st prize to be congratulated on the way the crops were grown, and also staged.

JUNKET MAKING.

So numerous were the entries that three sections had to be formed and a Champion Junket Making Contest held. The work was done in a quick, clean, and methodical manner. Having a uniform Rennet seems to have been approved of. A few competitors forgot the dirty and dusty state of the atmosphere in the Hall and neglected to cover their work over with butter muslin. The Junkets sold like hot cakes, and the go-ahead Dairyman should encourage the public to take up Junkets as a "habit."

BUTTER MAKING CONTESTS.

These classes were very well filled, and the competition as keen as ever. The work done by the competitors was generally very good, the novices promising very well.

The contest for the Championship was especially keen, and if there are to be as many competitors another year, it would be well to start it at an earlier hour. The public did not patronise the seats so well as usual, but then Elections, Wembley, and the Motor Show were counter attractions.

MILKERS' CONTESTS.

Here, the new arrangements, whereby great efforts are being made to get Milkers' Contests throughout the length and breadth of the land, with a view to the winners of these in the various counties competing at the Dairy Show, were only partially successful, and it was necessary to let others compete as well.

The Judge was well pleased with the way the various classes were supported and with the way in which the competitors brought out the importance of cleanliness, there being no dirty milkers amongst the lot. In the Junior Class the milkers were so good that it was very difficult to separate them. In the Senior Class, one expects keen competition, and we had it, very good milkers having to stand down. Some of the competitors were much too long over milking their cows, as much as 20 minutes per cow being taken in some instances, and one or two lost points for clean stripping. Covered buckets, cloths, and brushes put in their first appearance and were freely used, but in one case the cloth and brush were thrown down in the dirt after use.

COW-JUDGING COMPETITIONS.

The Young Farmers' Clubs held their Cow-judging Competition as in the two previous years, competing for the "Agricultural Gazette and Modern Farming" Silver Challenge Cup and British Dairy Farmers' Association Medals.

Teams of boys and girls from seven clubs were judged; the knowledge and keenness displayed by the competitors was again surprising. Generally the girls surpassed the boys as has happened before in these contests.

The Silver Cup was won by the Northease Jersey Calf Club, and the British Dairy Farmers' Association's Silver Medal was awarded to Miss Dorothy K. Dean of the same Club, as gaining highest points. The two Bronze Medals of the Association for the Competitors gaining the second and third highest points were awarded to Ronald Knight (Northease Jersey Calf Club) and Leslie White ("Milkal" Hemyock No. 1 Calf Club) respectively.

Inter-College Cow-Judging Competition (four entries).—As in the above competition, the competitors (in this case representing the various Agricultural Colleges) have to place the cows of various breeds in their respective order of merit and subsequently give their reasons for so doing. There was a good competition and the competitors had, as a whole, quite a good knowledge of the points of a Dairy Cow. Such contests develop the power of observation and reasoning, and are consequently most useful.

The following table of competitive entries for the last 13 years goes far to show the satisfactory nature of the demand for the space available:—

THE FOLLOWING TABLE GIVES COMPARATIVE DETAILS OF THE ENTRIES AT THE DAIRY SHOW WITH THOSE OF THE PAST THIRTEEN YEARS.													
	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1919.	1920.	1921.	1922.	1923.	1924.
Cattle	232	288	222	210	286	234	204	292	384	455	515	539	473
Milking and Butter Tests	236	264	213	209	265	167	198	334	492	614	760	772	718
Goats	84	75	81	105	110	85	116	115	109	101	91	67	72
Poultry	2,997	3,259	3,300	3,350	3,840	3,089	2,653	2,736	4,317	4,348	4,398	4,685	4,498
Pigeons	2,282	2,280	2,226	2,496	2,467	2,291	2,735	2,760	3,250	3,272	3,208	3,115	3,027
Cheese	355	362	249	343	395	301	271	342	462	406	418	488	486
Bacon and Hams...	55	104	58	71	89	67	45	—	34	56	87	89	113
Butter	535	525	484	618	549	371	339	242	286	322	388	401	483
Cream	42	47	26	48	43	27	20	16	19	32	37	33	30
Skim-milk Bread, &c.	115	98	72	83	64	46	65	40	40	No class	No class	No class	No class
Honey, &c.	88	96	87	95	106	126	77	20	49	63	58	92	102
Bottled Fruits and Vegetables	—	—	—	—	—	—	—	—	45	25	26	53	65
New and Improved Inventions...	31	34	21	25	41	24	6	23	14	38	30	37	37
Roots	218	196	172	190	190	59	51	80	144	148	183	190	283
Buttermaking Contests	120	145	165	165	141	97	101	110	86	162	141	129	154
Milkers' Contests	126	122	153	119	137	85	82	77	80	98	44	43	56
Junket-making Contest	—	—	—	—	—	—	—	—	7	8	12	23	33
Colonial Produce	—	—	—	—	—	—	—	—	2	2	3	3	1
Cow-judging Contest	—	—	—	—	—	—	—	—	—	—	—	7	4
Collection of Produce	—	—	—	—	—	—	—	—	—	—	—	—	8
	7,516	7,895	7,529	8,127	8,723	7,069	6,963	7,187	9,829	10,150	10,399	10,766	10,643

THE DAIRY SHOW MILKING TRIALS OF 1924.

BY ALEXANDER HAY, N.D.A., N.D.D.

THE Milking Trial results for 1924 show that the standards set up by breeds in previous years are still being maintained, and it is a pleasure to record the interest the British farmer is taking in the evolution of our breeds of dairy cattle.

Number of Entries.—425 cows and 30 goats, compared with 491 cows and 41 goats in 1923. The entry of goats was considerably below the figure for the previous year.

Number of Competitors.—The outbreaks of Foot and Mouth Disease seriously affected the number of actual competitors, as was the case in the previous year. The number of cows competing was lower than last year, and the number of entries and competitors in each class of cows and heifers is given in Table I.

Number of Breeds Represented.—Eleven distinct breeds were represented, but the number of breeds would have been larger had Foot and Mouth Disease not interfered with cattle coming up from the West of England. The Blue Albion breed, which took part in the trials for the first time last year, was again represented in larger numbers.

Highest Points Gained by a Cow.—A British Friesian Cow obtained the highest number of points in the Milking Trials in 1924 (159.9). Second place was obtained by an Ayrshire Cow (158.3). The record of 178.3 points, set up in 1921, still holds.

Highest Milk Yield.—The highest yield on the average of the two days' milking was 84 lbs., given by a British Friesian Cow milked three times a day; 87 lbs. is the highest average yield ever obtained at the Dairy Show. The cow obtaining this amount of milk, however, lost 30 points for poor quality, and, milked three times a day, she was below standard for fat on three occasions, and in solids-not-fat at all three milkings.

Number of Classes.—The number of classes in the trials was 30, being one higher than 29 in 1923. Compared with previous years, the butter-fat averages are very similar, and yields of milk show no considerable variation. It is a pleasure to record, however, that a few breeds set up a very level standard, and exhibited very few cows which obtained a low standard of points.

NOTES ON THE CLASSES.

Class 1. Pedigree Dairy Shorthorn Cow over 5 years old.—Entries 24; present 9. The number of cows present was small, but the majority reached the class standard. The first prize in the class and the Desborough Cup were won by Major S. P. Yates' cow, "Clara's Beauty" (No. 4) with 132·4 points, the cow which obtained a similar place in the competitions for the previous year. The second prize and reserve for the Desborough Cup was awarded to Major S. P. Yates' "Bright Darling" (No. 3) with 132·1 points.

Class 2. Pedigree Dairy Shorthorn Cow over 3 and under 5 years.—Entries 19; present 15. The number of competitors showed a decided improvement on the previous year, but several of the cows present failed to reach the class standard. First place in this case was a tie, and awards were made to Mr. T. P. Preece's "Pencoyd Blanche 2nd" (No. 38) with 124·1 points, and Mr. E. Ezra's "Thurnham Ringlet 14th" (No. 43) with the same number of points. This latter cow received the Shorthorn Society's Prize, while the former was reserve for the Shorthorn Society's Prize.

Class 3. Pedigree Shorthorn Heifer.—Entries 23; present 6. This class was somewhat disappointing, and entries were small. The first prize and the Shorthorn Society's Prize were awarded to Viscount Feilding's "Sudborough Ringlet" (No. 44) with 77·7 points. The second prize and the reserve for the Shorthorn Society's Prize was awarded to Mr. J. O. Burchnall's "Flamville Carrie" (No. 51) with 67·8 points.

Class 4. Non-Pedigree Dairy Shorthorn Cow.—Entries 27; present 15. The majority of cows in this class were above the standard, but the class average was very considerably reduced by one entry in the class. The first prize was awarded to Mr. A. B. Croxon's "Spot" (No. 67) with 142·5 points. This cow was also awarded the Shorthorn Society's prize. It will be remembered that this same cow put up an excellent performance at the previous Show, and was reserved for the following:—British Dairy Farmers' Association Gold Medal, Barham Cup, Shirley Cup, Spencer Cup, and for the Shorthorn's Association's Extra Prize. The second prize and the reserve for the Shorthorn Society's prize was awarded to Mr. H. Nelson's "Lady Wilson 3rd" (No. 76) with 116·3 points.

Class 5. Non-Pedigree Dairy Shorthorn Heifer.—Entries 11; competitors 2. The first prize in this class was awarded to Mr. F. Chapman's "Madge" (No. 104) with 83·1 points. The remaining heifer in the class failed to reach the standard.

Class 6. Lincolnshire Red Shorthorn Cow.—Entries 20; present 9. This class was somewhat disappointing, as the majority of the cows present failed to reach the class standard. The first prize was awarded

to Messrs. J. Evens & Son's "Burton Ruby Spot 14th" (No. 117) with 118 points, the second place being awarded to Mr. G. Bowser's "Soothern Mystic" (No. 113) with 113·5 points.

Class 7. Lincolnshire Red Heifer.—Entries 16; present 8. The first prize in this class was awarded to Mr. S. Reading's "Langford Damsel 19th" (No. 133) with 101 points, the same owner securing second place with "Langford Damsel 21st" (No. 131) with 89·3 points.

Class 8. British Friesian Cow over 5 years old.—Entries 23; competitors 9. This class was not very largely represented, but the majority of cows reached the standards of the class. First prize was awarded to Messrs. A. & J. Brown's "Hedges Banattatwo" (No. 148) with 137·8 points, and second place was secured by Mr. G. Holt-Thomas' "Blackmore Ena 2nd" (No. 153) with 134 points, the points awarded for the same class last year being 154·7 and 144·8 respectively.

Class 9. British Friesian Cow over 3 and under 5 years old.—Entries 24; competitors 16. This class was fairly well represented, and the average of points obtained were well above the points awarded for the class. The first prize, the reserve for the Gold Medal, the reserve for the Spencer Cup, and the Shirley Cup, were awarded to Messrs. W. & R. Wallace's "Saturn May 2nd" (No. 176) with 153·4 points, the second prize being awarded to Lord Rayleigh's "Terling Skylark 14th" (No. 164) with 131·4 points.

Class 10. British Friesian Heifer.—Entries 10; competitors 6. This class was more strongly supported than last year. The first prize was awarded to Mr. E. Furness's "Hamels Delight" (No. 196) with 101·9 points, and the second prize to Mr. F. Griffiths' "Tyddyn Beautiful" (No. 197) with 98·6 points.

Class 12. Devon Cows.—Entries 9; competitors 3. The first prize and the Busk Cup were awarded to Mr. A. T. Loram's "Novah" (No. 202) with 109·1 points, the second prize and reserve for the Busk Cup being awarded to Messrs. R. A. Clarke & Sons' "Gentle" (No. 207) with 102·3 points.

Class 13. Red Poll Cow over 5 years old.—Entries 10; competitors 7. The majority of the cows in this class failed to reach the class standard. The first prize and reserve for the Red Poll Cattle Society's prize was awarded to Mr. W. L. Horbury's "Sudbourne Mina" (No. 213) with 113·5 points, and the second prize was awarded to Mr. M. C. Pilkington's "Harefield Apricot 1st" (No. 215) with 103·4 points.

Class 14. Red Poll Cow over 3 and under 5 years old.—Entries 13; competitors 10. The first prize in this class was awarded to Mr. W. R. Glazebrook's "Ferryman Linnat" (No. 229) with 126·8 points. This cow also received the Red Poll Cattle Society's Prize. The second prize was awarded to Mr. M. C. Pilkington's "Hutton Apricot" (No. 233) with 102·2 points.

Class 15. Red Poll Heifer.—Entries 19 ; competitors 9. There were a large number of animals present in this class, compared with the previous year, and the standard obtained was fairly high. The first prize, and also the Red Poll Cattle Society's Extra Prize, were awarded to Mr. J. B. Dimmock's "Shotford Lady Mary 5th" (No. 240) with 93.1 points, and the second prize was gained by Capt. A. Richardson's "Seven Springs Lucy" (No. 249) with 85.2 points.

Class 16. Blue Albion Cow.—Entries 15 ; competitors 6. This class was better represented than the previous year, and the standard obtained by the classes was much better than that of last year. The first prize was obtained by Mr. E. H. Wheatley's "Cliftonthorpe Flo" (No. 264) with 121.7 points. Lt.-Col. Harrison's "Poplars Beauty" (No. 254) obtained second prize with 117.2 points.

Class 18. Ayrshire Cow.—Entries 11 ; competitors 8. This class secured a very high average, and all the cows reached the breed standard. Ayrshire classes again showed a very high average, and were distinctly above the other classes in the Show for average standards for the class. The first prize in the class, the Gold Medal, the Spencer Cup, the reserve for the Shirley Cup, the Rowallen Cup, and the reserve for the National Milk Cup, were obtained by Major C. R. Dudgeon's "Cargen Holm Sally 3rd" (No. 269) with 158.3 points. The second prize and the reserve for the Rowallen Cup were gained by Messrs. A. & A. Kirkpatrick's "Auchinbay Meg" (No. 277) with 144.9 points.

Class 19. Ayrshire Heifer.—Entries 19 ; competitors 10. This class also obtained a high average of heifers, the majority being above the average for the class. The first prize was obtained by Major C. R. Dudgeon's "Cargen Holm Elfreda 2nd" (No. 285) with 107.3 points, and the second prize was gained by Major C. R. Dudgeon's "Cargen Holm Maud 18th" (No. 283) with 104.6 points.

Class 20. Guernsey Cow over 5 years.—Entries 9 ; competitors 5. All the cows save the first prize cow in this class failed to reach standard. There was a great difference between the first prize cow and the remainder of the class. The first prize was awarded to Mr. J. B. Body's "Lynchmere Rosy of Mauxmarquis 4th" (No. 302) with 105.7 points. This cow was also awarded the Stagenhoe Cup.

Class 21. Guernsey Cow over 3 and under 5 years.—Entries 10 ; competitors 8. The first prize was awarded in this case to Sir James Remnant's "Southern Starette" (No. 306) with 100.6 points, and the second prize to Mr. W. F. Trumper's "Dahlia Ruby" (No. 315) with 96.8 points.

Class 22. Guernsey Heifer.—Entries 10 ; competitors 9. The first prize in this class was awarded to Sir James Remnant's "Dene Merton Preel" (No. 317) with 92.5 points, and the second to Sir E. A. Hambro's "Milton Rosy 5th" (No. 316) with 88.3 points.

Class 23. Jersey Cow.—Entries 26 ; competitors 16. The first prize in this class and the National Milk Cup were awarded to Major H. W. Huntington's "Marriette's Violet" (No. 350) with 124·7 points; and the second prize to Mr. L. E. Tubbs' "Oxlip" (No. 337) with 115·9 points.

Class 24. Jersey Cow over 3 and under 5 years.—Entries 28 ; competitors 19. This class was inaugurated for the first time during the Milking Trials this year, and was one of the most successful classes as regards number of entries. The first prize was awarded to Mr. G. Berry's "Dewberry" (No. 378) with 116·7 points, and the second prize to Mr. R. Bruce Ward's "Princess Marigold" (No. 371) with 114·1 points.

Class 25. Jersey Heifer.—Entries 25 ; competitors 15. No. 387, Mrs. E. Watts' "Essence Pride" was first with 89·5 points, and No. 392, Mr. R. Bruce Ward's "King Cup," secured second place with 84·7 points.

Class 26. Kerry Cow.—Entries 12 ; competitors 9. The first prize and the Silver Challenge Cup were awarded to No. 408, Mr. J. W. Towler's "Rosebud of Carton" with 103·7 points, the reserve for the Silver Challenge Cup and the second prize being awarded to No. 407, Lt.-Col. J. Bennett-Stanford's "Pythouse Aggie" with 102·2 points.

Class 27. Kerry Heifer.—Entries 9 ; competitors 5. This was a somewhat disappointing class, only the first prize animal reaching the standard of points, No. 417, "Rebecca of Warren," exhibited by the Theosophical Educational Trust (Great Britain and Ireland), Ltd., securing the award with 57·4 points.

Class 29. Dexter Heifer.—Entries 4 ; competitors 2. The first prize was awarded to Col. W. O. Gibbs' (No. 430) "Woodleigh Daphne," with 70·4 points, and second prize to Mrs. M. H. Neville's "Creole of Copthorne" (No. 433) with 47·3 points.

Class 30. Cows milked three times a day.—Entries 5 ; competitors 3. Two of the cows exhibited were British Friesians, the remaining cow being a Shorthorn. Two of the cows lost points through quality being below standard in both fat and total of solids. The first prize went to Mr. G. Holt-Thomas's "Beccles Silver Queen" (No. 437) with 159·9 points, and second prize to No. 434, Lord Rayleigh's "Terling Cherry 19th" with 131·4 points.

Class Standard Points.—One of the impressions gained by the trials was the good average obtained by the Ayrshire breed, which had a larger number of cows over the class standard than many of the other breeds. Several classes had a few cows with a high average, but the average for the class was considerably lowered by animals not coming up to standard.

CHALLENGE CUPS AND TROPHIES.

For the second year, the Ayrshire breeders have carried off a large proportion of the inter-breed trophies, and it was evident during the competition that the keenest and most determined effort was being put up by the various breeds to carry off the inter-breed honours.

The Challenge Cups, which are awarded annually, and the conditions attached to them are set out below :—

- (1) The "Barham" Challenge Cup, awarded to the owner of the cow gaining the greatest number of points in the Milking Trials.
- (2) The "Spencer" Challenge Cup, awarded to the owner of the best Dairy Cow in the Show, gaining the greatest number of points by Inspection, Milking Trial and Butter Test.
- (3) The "Shirley" Challenge Cup, awarded to the owner of the cow giving the greatest weight of milk in the Milking Trials, such milk to contain not less than 3 per cent. of fat and 8·5 per cent. of non-fatty solids.
- (4) The National Milk Cup, awarded to the owner of the cow or heifer of any breed gaining the greatest number of points per 1,000 lbs. live weight.

The Barham Cup went to Major C. R. Dudgeon's Ayrshire Cow, "Cargen Holm Sally 3rd," which finished with a creditable total of 158·3 points. This cow secured 3·84 and 5·66 percentage of butter fat in the morning and evening milkings respectively, and the total solids on both occasions were over 9 per cent. The reserve, Messrs. W. & R. Wallace's Friesian Cow, "Saturn May 2nd" (No. 176) obtained 153·4 points.

The Spencer Cup was carried off by No. 269, Major C. R. Dudgeon's Ayrshire Cow, winner of the Barham Cup, "Cargen Holm Sally 3rd," with 243·05 points, the reserve being No. 176, Messrs. W. & R. Wallace's Friesian Cow, "Saturn May 2nd," the reserve for the Barham Cup, with 232·15 points.

For the Shirley Cup the placing was in the opposite direction No. 176, Messrs. W. & R. Wallace's Friesian Cow, "Saturn May 2nd" securing first place, and the reserve being awarded to Major C. R. Dudgeon's Ayrshire Cow, "Cargen Holm Sally 3rd," the winner of the two previous cups.

The National Milk Cup, which is a comparatively recent award, introduces an additional factor in the trials, viz. :—live weight and its relationship to the points gained, No. 350, Major H. W. Huntington's Jersey Cow, "Marriette's Violet," being the winner, the reserve, No. 269, being Major C. R. Dudgeon's "Cargen Holm Sally 3rd."

The Bledisloe Bowl is awarded to the Breed Society adjudged to have the best exhibit of good all-round Dairy Cows. The cows to constitute each representative breed team are the first six cows in the Milking Trials, provided that such animals have been considered by the Inspection Judges to be typical specimens of their respective breeds. In the judging for this trophy the inspection points, which are double those given in the Spencer Cup Competition, are added to the Milking Trial points gained by the six cows constituting each team. This trophy was awarded to the Ayrshire breed for the second year in succession, the reserves being the non-pedigree Shorthorns, which secured the same place in last year's Show.

In view of the great interest taken in the inter-breed challenge cups and trophies, it may be of value to tabulate the awards.

	Breed of Winner.		Breed of Reserve.	
Barham Cup	Ayrshire Cow ... (No. 269)	...	British Friesian. (No. 176)
Spencer Cup	Ayrshire Cow ... (No. 269)	...	British Friesian. (No. 176)
Shirley Cup	British Friesian (No. 176)	...	Ayrshire Cow. (No. 269)
National Milk Cup	Jersey Cow ... (No. 350)	...	Ayrshire Cow. (No. 269)
Bledisloe Bowl	Ayrshire Team	...	Non-Pedigree Dairy Shorthorn Team.
B.D.F.A. Gold Medal	Ayrshire Cow ... (No. 269)	...	British Friesian. (No. 176)

ANIMALS CONSTITUTING THE BLEDISLOE TROPHY TEAMS AND POINTS GAINED, DAIRY SHOW, 1924.

Class 1—Pedigree Dairy Shorthorn.					Class 4—Non-Pedigree Shorthorns.					Class 6—Lincoln Red Shorthorns.					
No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.
4	132.4	—	132.4	67	142.5	90	232.5	117	118.0	—	118.0	113	113.5	—	113.5
3	132.1	—	132.1	76	116.3	70	186.3	113	113.5	—	113.5	122	109.9	90	199.9
20	120.5	—	120.5	85	113.8	—	113.8	108	91.9	100	191.9	119	88.8	—	88.8
11	107.5	80	187.5	77	106.7	—	106.7	106	87.8	—	87.8	106	609.9	190	799.9
13	103.8	—	103.8	80	106.6	100	206.6								
6	102.9	70	172.9	83	104.3	80	184.3								
	699.2	÷ 150 =	849.2		690.2	÷ 340 =	1,030.2								

Class 8—British Friesian.					Class 13—Red Polls.					Class 16—Blue Albions.					
No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.
148	137.8	90	227.8	213	113.5	70	183.5	264	121.7	90	211.7	254	117.2	70	187.2
153	134.0	—	134.0	215	103.4	—	103.4	256	115.1	100	215.1	262	105.2	—	105.2
142	131.3	—	131.3	211	99.6	80	179.6	255	91.8	80	171.8	252	50.8	—	50.8
154	130.4	100	230.4	218	95.5	90	185.5								
160	123.0	—	123.0	212	88.7	100	188.7								
159	119.1	—	119.1	214	82.0	—	82.0								
	775.6	÷ 190 =	965.6		582.7	÷ 340 =	922.7								

ANIMALS CONSTITUTING THE BLEDISLOE TROPHY TEAMS AND POINTS GAINED, DAIRY SHOW, 1924—Continued.

Class 18—Ayrshire.				Class 23—Jersey.				Class 26—Kerry.			
No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue	Milk Trial Points.	Insp. Points.	Total Points.	No. in Catalogue.	Milk Trial Points.	Insp. Points.	Total Points.
269	158.3	90	248.3	350	124.7	—	124.7	408	103.7	100	203.7
277	144.9	100	244.9	337	115.9	90	205.9	407	102.2	—	102.2
268	140.5	—	140.5	351	106.2	—	106.2	406	99.7	—	99.7
273	134.4	—	134.4	333	104.8	—	104.8	410	88.8	—	88.8
272	129.5	80	209.5	339	98.0	70	168.0	416	83.3	80	163.3
275	128.3	—	128.3	342	97.8	—	97.8	412	81.8	70	151.8
835.9 + 270 = 1,105.9				647.4 + 160 = 807.4				559.5 + 150 = 809.5			

RESULTS.											
Class 18	...	...	Ayrshires	...	...	835.9	...	270.0	...	1,105.9	Winner.
" 4	...	...	Non-Pedigree Shorthorns	...	...	690.2	...	340.0	...	1,030.2	Reserve.
" 8	...	...	British Friesians	...	...	775.6	...	190.0	...	965.6	
" 16	...	...	Blue Albions	...	...	601.8	...	340.0	...	941.8	
" 13	...	...	Red Polls	...	...	582.7	...	340.0	...	922.7	
" 1	...	...	Pedigree Shorthorn	...	...	699.2	...	150.0	...	849.2	
" 26	...	...	Kerries	...	...	559.5	...	250.0	...	809.5	
" 23	...	...	Jerseys	...	...	647.4	...	160.0	...	807.4	
" 6	...	...	Lincoln Red Shorthorn	...	...	609.9	...	190.0	...	799.9	

Classes Nos. 11, 12, 17, 20, and 28 did not have sufficient animals present to compete.

TABLE I.

Class	Description.	Number in Class.		Average Live Weight of Class.	Average Yield of Milk.	Yield of Milk per 1,000 lbs.	Average Fat.	Animals below Standard for Fat A.M. or P.M.	Animals losing Points for Quality of Milk.	Average Points lost by Class for Quality of Milk.	Points per 1,000 lbs. Live Weight.	Average Points gained by Class.	H.D.F.A. Standard Points for Class.
		Entered	Present in Show.										
1	<i>Cows over 5 years old.</i>			cwts. qrs. lbs.	lbs.	lbs.	%	%	%				
	Dairy Shorthorn	24	9	12 0 24	51.3	35.4	4.27	11.1	22.2	4.4	80.0	109.5	100
	Ditto Non-Pedigree	27	15	12 2 28	44.7	31.7	4.33	20.0	33.3	4.7	66.1	93.0	110
	Lincoln Red Shorthorn	20	9	12 1 27	48.3	34.5	3.54	55.5	77.8	8.9	67.0	93.8	100
	British Friesian	23	9	12 3 22	61.6	42.5	3.43	66.6	88.9	10.0	81.5	118.2	110
	Devon	9	3	10 0 20	42.6	37.4	4.56	Nil	33.3	3.3	82.1	93.6	90
	Red Poll	10	7	10 2 23	45.5	37.9	3.84	42.8	42.8	7.0	76.8	92.1	100
	Blue Albion	15	6	11 1 6	45.3	30.5	4.76	Nil	16.7	3.3	78.6	100.3	100
	Ayrshire	11	8	10 3 6	58.7	48.5	4.59	Nil	Nil	Nil	110.8	134.1	90
	Guernsey	9	5	9 1 9	31.9	30.5	4.84	Nil	Nil	Nil	74.1	77.4	85
	Jersey	26	16	7 1 20	34.1	41.0	5.47	Nil	Nil	Nil	110.5	91.9	90
	Kerry	12	9	8 2 17	35.1	31.1	4.58	11.1	32.2	3.3	82.1	79.6	80
2	<i>Cows over 3 and under 5 years old.</i>												
	Dairy Shorthorn	19	15	11 1 23	41.5	32.3	4.07	26.6	33.3	3.3	68.8	88.3	83
	British Friesian	24	16	12 0 26	52.3	38.4	3.89	6.3	35.0	4.4	80.0	108.8	91
	Red Poll	13	10	10 0 5	40.2	35.6	4.16	20.0	30.0	3.0	79.6	89.6	83
	Guernsey	10	8	8 1 19	33.6	35.6	4.77	Nil	Nil	Nil	87.3	82.3	71
	Jersey	28	19	7 3 9	32.5	37.1	5.90	Nil	5.3	1.1	100.0	87.7	74
	<i>Heifers.</i>												
	Dairy Shorthorn	23	6	10 0 20	30.5	26.8	3.71	33.3	33.3	5.0	53.5	61.0	66
3	<i>Heifers.</i>												
	Ditto Non-Pedigree	11	2	10 0 5	32.3	28.7	4.26	50.0	30.0	5.0	59.4	66.8	73
	Lincoln Red Shorthorn	16	8	10 2 11	33.5	28.2	3.66	50.0	62.5	6.2	54.8	65.1	66
	British Friesian	10	6	11 1 8	41.3	32.6	3.55	16.6	16.6	3.3	67.0	85.0	73
	Red Poll	18	9	9 1 24	30.7	28.9	4.58	Nil	Nil	Nil	86.2	71.5	66
	Ayrshire	19	10	9 2 17	40.4	37.4	4.64	Nil	Nil	Nil	88.3	93.2	60
	Guernsey	10	9	7 2 23	30.9	35.8	5.06	Nil	Nil	Nil	91.9	70.2	56
	Jersey	25	15	6 3 3	26.9	35.3	5.53	Nil	6.7	0.7	91.9	69.9	60
	Kerry	9	5	6 1 20	17.9	24.9	5.26	20.0	40.0	6.0	53.6	38.6	53
	Dexter	4	2	5 1 24	21.7	35.5	5.69	Nil	Nil	Nil	96.2	58.9	46

TABLE II.—SHOWING NUMBER OF COWS TESTED, AVERAGE POINTS GAINED AND THE NUMBER OF COWS COMING UP TO THE SOCIETY'S STANDARD—1922 TO 1924

Class.	Description.	B.B.S. Standard Points.	No. of Cows Tested.				Average Points Gained.		Number and Percentage of Cows above Standard.				Average Live Weight of Class.	
			1922 1923 1924				1922 1923		1922 1923 1924				1923 1924	
			1922	1923	1924	1922	1923	1924	%	%	%	%	ewts. qrs. lbs. cwt.	lbs.
1	Pedigree Dairy Shorthorn ...	100	20	17	9	107.7	114.4	109.5	12	60.0	70.6	77.7	12	0 16
2	Ditto (over 3 and under 5 years)	83	12	7	15	94.9	100.9	88.3	10	83.3	6	85.7	11	3 1
3	Ditto Heifers	66	11	13	6	102.1	67.2	61.0	8	72.7	6	46.1	3	25 0
4	Non-Pedigree Shorthorn ...	110	11	15	108.1	111.4	93.0	6	54.5	5	45.4	2	33.3	9 3
5	Ditto Heifers	73	4	9	2	73.0	88.7	66.8	2	50.0	8	88.8	12	0 7
6	Lincoln Red Shorthorns	100	8	10	9	113.2	114.2	93.8	5	62.5	9	90.0	3	10 5
7	Ditto Heifers	66	5	7	8	91.4	88.9	65.1	3	60.0	6	85.7	4	50.0
*8	British Friesians	110	14	4	9	120.2	122.9	118.2	8	57.1	2	50.0	6	66.6
9	Ditto (over 3 and under 5 yrs.)	91	16	11	16	92.6	117.4	108.8	9	56.2	11	100.0	12	0 2
10	Ditto Heifers	73	7	2	6	79.3	75.6	85.0	5	71.4	1	50.0	2	1 8
11	South Devons	100	5	3	—	100.5	114.9	—	2	40.0	2	66.6	14	1 11
12	Devons ...	90	7	5	3	98.7	99.7	93.6	5	71.4	4	80.0	11	1 11
13	Red Polls	100	14	6	7	91.5	116.7	92.1	4	28.6	4	66.6	10	1 8
14	Ditto (over 3 and under 5 yrs.)	83	10	9	10	76.4	95.5	89.6	4	40.0	7	77.7	6	60.0
15	Ditto Heifers	66	10	6	9	64.7	72.0	71.5	4	40.0	5	83.3	9	1 24
16	Blue Albions	100	—	2	6	—	78.3	100.3	—	—	0	Nil	4	66.6
18	Ayrshires	90	13	6	8	95.7	128.5	134.1	10	76.9	5	83.3	10	0 16
19	Ditto Heifers	60	10	10	10	78.5	87.6	93.2	10	100.0	9	90.0	9	0 13
20	Guernseys	85	6	4	5	88.4	77.4	77.4	3	50.0	1	25.0	8	2 20
21	Ditto (over 3 and under 5 yrs.)	71	7	6	8	72.4	97.0	82.3	4	57.1	6	100.0	6	75.0
22	Ditto Heifers	56	5	2	9	62.2	77.5	76.2	4	80.0	1	50.0	8	88.8
23	Jerseys ...	90	24	22	16	79.7	89.8	91.9	5	20.8	12	54.5	7	2 1
24	Ditto Heifers, bred in Gt. Britain and Ireland	60	8	12	19	74.7	70.8	87.7	8	100.0	9	75.0	6	2 16
25	Ditto Heifers, bred in Channel Islands	60	4	4	15	66.8	67.8	69.9	3	75.0	4	100.0	6	2 24
26	Kerries ...	80	8	7	9	75.3	87.0	79.6	3	37.5	4	57.1	8	0 8
27	Ditto Heifers	53	5	4	5	49.9	38.6	—	1	20.0	1	25.0	6	2 1
28	Dexters	70	4	4	—	59.7	59.0	—	1	25.0	1	25.0	6	0 7
29	Ditto Heifers	47	—	4	2	—	46.6	58.9	—	—	2	50.0	4	2 26

* British Friesian Cows in Class 30 excluded.

TABLE III.—AVERAGE POINTS GAINED IN THE MILKING TRIALS EACH YEAR SINCE 1911.

Year.	Pedigree Short-horn Cows.	Pedigree Short-horn Heifers.	Non-Pedigree Short-horn Cows.	Non-Pedigree Short-horn Heifers.	Lincolnshire Red Short-horn Heifers.	Lincolnshire Red Short-horn Cows.	Jersey Cows.	Guernsey Cows.	Guernsey Heifers.	Red Poll Cows.	Red Poll Heifers.	Devon Cows.	South Devon Cows.	Avonshire Cows.	Kerry Cows.	Kerry Heifers.	Dexter Cows.	British Friesian Cows.	British Friesian Heifers.	Welsh Black Cows.	Blue Albion.
1911	89.0	61.4	112.2	76.3	103.5	65.9	91.9	88.8	80.2	63.7	—	—	104.1	54.3	67.0	—	—	—	—	—	—
1912	98.0	40.3	124.4	79.4	95.5	67.3	94.5	71.0	96.3	75.9	—	—	110.6	79.6	93.3	—	—	—	—	—	—
1913	95.2	63.2	117.1	75.2	95.7	69.0	90.4	77.3	95.5	68.8	—	—	103.9	107.6	68.3	—	—	—	—	—	—
1914	106.5	62.4	106.9	76.7	96.3	67.7	89.8	85.5	127.6	65.5	—	—	108.5	—	—	—	—	—	—	—	—
1915	103.5	65.5	118.5	75.7	94.9	57.9	76.5	82.6	89.0	66.0	—	—	76.0	—	—	—	—	80.7	92.3	—	—
1919	95.2	59.6	95.0	89.2	88.4	68.3	80.3	84.8	54.6	88.8	85.6	—	—	—	—	—	—	80.7	92.3	—	—
1920	97.4	79.7	60.9	111.8	76.9	85.6	85.5	84.2	63.9	91.8	72.1	108.5	—	—	69.6	—	—	53.6	83.1	70.7	—
1921	103.9	96.3	61.6	117.5	73.5	105.3	76.3	92.8	67.1	83.0	69.5	107.8	104.4	106.7	76.5	49.3	57.8	133.6	78.8	—	—
1922	107.7	94.9	72.1	108.1	73.0	113.2	71.4	79.7	88.4	62.2	91.5	64.7	98.7	100.5	95.7	75.3	59.7	120.2	79.3	83.7	—
1923	114.4	109.9	67.2	111.4	88.7	114.2	88.9	89.8	77.0	77.5	116.7	72.0	99.7	114.9	128.5	87.6	59.0	135.0	75.6	—	—
1924	109.5	68.3	61.0	93.0	93.8	66.8	91.9	77.4	76.2	92.1	71.5	93.6	—	134.1	79.6	38.6	—	118.2	85.0	100.3	—
Aver. Points per ann. B.D.F.A. Class Standard	102.2	89.3	110.4	77.1	99.7	72.3	86.4	82.3	66.9	95.7	69.8	99.0	103.5	97.5	77.8	48.2	55.3	107.8	76.1	—	—
	100	83	110	73	100	66	90	85	56	100	66	90	100	90	80	53	70	110	73	90	100

TABLE IV.—SHOWING THE HIGHEST POINTS GAINED EACH YEAR SINCE 1911.

Year.	Pedigree Short-horn Cows.	Pedigree Short-horn Heifers.	Non-Pedigree Short-horn Cows.	Non-Pedigree Short-horn Heifers.	Lincolnshire Red Short-horn Heifers.	Lincolnshire Red Short-horn Cows.	Jersey Cows.	Guernsey Cows.	Guernsey Heifers.	Red Poll Cows.	Red Poll Heifers.	Devon Cows.	South Devon Cows.	Avonshire Cows.	Kerry Cows.	Kerry Heifers.	Dexter Cows.	British Friesian Cows.	British Friesian Heifers.	Welsh Black Cows.	Blue Albion.
1911	153.3	76.7	143.0	108.8	133.5	81.1	115.4	88.8	120.3	70.9	—	—	112.7	75.7	92.9	—	—	—	—	—	—
1912	125.6	57.7	169.5	106.7	130.4	89.1	117.9	85.0	122.7	90.8	—	—	144.8	90.9	102.8	—	—	—	—	—	—
1913	127.6	83.6	158.0	102.1	114.8	81.2	123.1	93.8	120.5	81.2	—	—	115.7	130.2	93.7	—	—	—	—	—	—
1914	144.8	98.1	136.9	97.6	105.5	77.2	112.2	99.7	144.9	98.1	—	—	133.8	—	—	—	—	—	—	—	—
1915	125.8	79.1	149.5	101.7	111.2	80.2	104.5	96.7	107.0	82.1	—	—	99.2	—	—	—	—	103.6	116.3	—	—
1919	136.4	69.0	117.8	118.8	133.6	85.1	99.4	118.8	82.4	135.9	96.2	111.3	—	—	101.3	—	—	103.6	116.3	—	—
1920	116.7	87.0	129.1	96.1	115.1	100.2	127.9	139.4	73.8	119.0	92.2	127.9	—	—	95.6	58.0	47.3	155.6	96.7	—	—
1921	131.9	81.0	158.8	87.5	157.1	96.8	100.4	124.1	83.7	117.3	81.2	132.5	143.6	116.8	107.9	63.2	89.0	173.8	89.5	—	—
1922	152.2	93.1	129.8	88.2	150.6	82.4	109.3	128.0	78.8	122.6	80.3	126.2	142.4	120.0	85.0	63.4	70.9	158.3	88.9	109.9	—
1923	167.1	121.9	90.0	166.1	116.5	137.6	109.0	119.9	107.7	142.7	94.6	125.3	139.2	150.3	114.8	60.3	79.0	154.7	78.4	—	—
1924	132.4	77.7	142.5	83.1	118.0	101.0	124.7	105.7	92.5	126.8	93.1	109.1	—	158.3	103.7	57.4	—	153.4	101.9	—	—

TABLE V.—QUANTITY AND QUALITY OF MILK.

Class No.	BREED.	Year.	No. of Competitors.	Average Weight of Milk.		Total Weight of Milk.	Average Composition of Milk.				Total Solids.	
				Milk.			Fat.		Solids not Fat.		Total Solids.	
				Morn.	Even.		Morn.	Even.	Morn.	Even.	Morn.	Even.
1	Pedigree Dairy Shorthorn ...	1924	9	lbs. 28-29	lbs. 23-05	lbs. 51-3	3-85	4-69	9-02	8-70	12-87	13-39
2	Do. do. (over 3 and under 5 years)	1924	15	22-28	19-26	41-54	3-33	4-80	9-07	9-01	12-40	13-80
3	Do. Heifers	1924	6	16-35	14-17	30-52	2-94	4-48	9-17	9-04	9-12	13-53
4	Non-pedigree Shorthorn ...	1924	15	24-19	20-59	44-78	3-75	4-91	9-13	8-95	12-89	13-86
5	Do. Heifers	1924	2	16-87	15-42	32-29	3-15	5-37	9-17	9-12	12-32	14-49
6	Lincoln Red Shorthorn	1924	9	26-43	21-81	48-24	2-82	4-25	9-02	8-88	11-84	13-14
7	Do. do.	1924	8	17-87	15-58	33-45	2-99	4-32	9-33	9-06	12-33	13-38
*8	British Friesians	1924	9	33-76	27-84	61-60	2-99	3-87	8-84	8-76	11-83	12-63
9	Do. do. (over 3 and under 5 years)	1924	16	28-16	24-13	52-29	3-88	3-90	8-92	8-79	12-79	12-69
10	Do. do. Heifers	1924	6	22-35	18-99	41-34	3-42	3-67	9-19	9-00	12-61	12-67
12	Devons	1924	3	23-36	19-25	42-61	4-55	4-57	9-04	8-84	13-59	13-42
13	Red Polls	1924	7	24-99	20-49	45-48	3-54	4-14	8-97	8-91	12-52	13-04
14	Do. (over 3 and under 5 years)	1924	10	22-21	17-95	40-16	3-93	4-39	9-51	9-32	13-45	13-72
15	Do. Heifers	1924	9	16-60	14-05	30-65	4-23	4-93	9-38	9-33	13-62	14-26
16	Blue Albions	1924	6	24-84	20-37	45-21	4-56	4-95	9-16	9-20	13-90	14-15
18	Ayrshires	1924	8	31-84	26-88	58-72	4-17	5-01	9-47	9-27	13-64	14-28
19	Do. Heifers	1924	10	21-65	18-72	40-37	4-30	4-97	9-45	9-56	13-76	14-53
20	Guernseys	1924	5	17-01	14-90	31-91	4-06	5-62	9-54	9-31	13-60	14-93
21	Do. (over 3 and under 5 years)	1924	8	18-65	14-89	33-54	4-28	5-26	9-63	9-42	13-91	14-68
22	Do. Heifers	1924	9	17-04	13-86	30-90	4-66	5-45	9-61	9-54	14-27	14-99
23	Jerseys	1924	16	19-01	15-12	34-13	4-99	5-95	9-57	9-56	14-92	16-01
24	Do. Heifers, bred in Gt. Britain and Ireland	1924	19	17-66	14-8	32-46	5-35	6-45	9-57	9-29	14-46	15-69
5	Do. do. bred in Channel Islands	1924	15	14-35	12-53	26-88	4-86	6-19	9-60	9-29	14-46	15-69
6	Kerries	1924	9	19-09	15-97	35-06	3-99	5-17	9-03	8-82	13-02	13-99
7	Do. Heifers	1924	5	9-53	8-41	17-94	4-45	6-07	9-13	8-82	13-58	14-89
9	Dexter Heifers	1924	2	11-95	9-7	21-65	4-58	6-80	9-45	9-50	14-04	16-30

* Excluding cows milked three times a day.

TABLE VI.—NUMBER OF ANIMALS YIELDING MILK DEFICIENT IN FAT AND OTHER SOLIDS.

Description.	Less than 3 per cent. of Fat.										Less than 8.5 per cent. of other Solids.									
	1913	1914	1915	1919	1920	1921	1922	1923	1924	1913	1914	1915	1919	1920	1921	1922	1923	1924	1923	1924
Cows.																				
airy Shorthorn—Pedigree ...	6	2	6	5	2	4	6	2	1	3	0	0	1	2	1	0	2	1	0	1
airy Shorthorn—Non-Pedigree ...	3	4	4	2	2	3	1	1	3	3	2	0	1	0	0	1	0	2	1	2
incorn Red Shorthorn ...	0	2	5	2	4	0	3	0	5	1	0	0	1	4	0	3	0	2	0	2
British Friesian ...	—	4	5	2	12	0	6	—	6	0	0	0	—	—	0	0	0	—	—	—
outh Devon ...	0	2	1	—	0	0	0	0	0	—	0	0	0	—	—	0	0	0	0	0
evon ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ed Poll ...	2	0	—	5	1	0	4	0	3	1	0	0	2	0	4	1	0	0	0	1
ite Albion ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Welsh Black ...	0	—	—	—	—	—	3	0	0	0	—	—	—	—	—	0	—	—	—	0
yrshire ...	0	0	—	—	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
uernsey ...	0	0	0	0	1	0	2	1	1	0	0	0	1	0	1	0	0	1	0	1
erry ...	0	—	—	—	0	0	0	—	—	—	—	—	—	—	—	—	—	—	—	—
exter ...	—	—	—	0	0	0	0	1	—	—	—	—	—	—	—	—	—	—	—	—
Cows (OVER 3 AND UNDER 5 YEARS)																				
airy Shorthorn ...	—	—	—	2	3	5	2	1	4	—	—	—	0	1	1	0	2	1	3	1
ritish Friesian ...	—	—	—	—	—	0	10	4	1	—	—	—	—	—	1	3	2	1	0	0
ed Poll ...	—	—	—	—	2	0	6	2	2	—	—	—	—	0	1	1	0	0	0	0
uernsey ...	—	—	—	—	—	—	0	0	0	—	—	—	—	—	—	0	0	0	0	0
ersey ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
HEIFERS.																				
airy Shorthorn—Pedigree ...	1	3	1	1	2	1	0	0	2	0	0	0	0	0	0	1	0	0	0	0
airy Shorthorn—Non-Pedigree ...	1	2	1	1	0	2	0	1	1	2	0	0	0	0	0	0	1	0	1	0
incorn Red Shorthorn ...	2	2	3	0	3	0	4	1	4	1	0	0	0	0	3	1	0	0	0	0
ritish Friesian ...	0	1	3	1	1	1	2	0	0	—	0	0	0	0	0	0	1	0	0	0
ed Poll ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
uernsey ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ersey ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	15	22	29	23	34	18	56	17	35	11	2	0	7	23	18	12	10	16	10	16
Number of Animals Tested	125	105	85	145	183	220	253	214	236	125	105	85	145	183	220	253	214	236	214	236

* Excluding cows milked three times a day.

MILKING TRIALS, 1924.

CLASS 1.—DAIRY SHORTHORN COWS (ENTERED IN OR ELIGIBLE FOR COATES' HERD BOOK, OR ITS PEDIGREE SENT FOR SUCH ENTRY PREVIOUS TO THE SHOW. BORN ON OR PREVIOUS TO 1ST AUGUST, 1919).

Number Name	2 Lantunan Barrington Beatty.	3 Bright Darling	4 Clara's Beauty	6 Merry Maid 5th
Born	Feb. 2, 1919, 1,276	Dec. 22, 1916, 1,563	Mar. 4, 1918, 1,437	May 3, 1917, 1,426
Live weight, in lbs.	Sept. 21, 29	Sept. 27, 23	Sept. 13, 37	Sept. 26, 24
Last Calved				
Days since Calving				
Weight of Milk, 1st day	Morn Even 22-3 20-4	Morn Even 33-7 27-3	Morn Even 35-9 25-6	Morn Even 24-7 21-4
Weight of Milk, 2nd day	23-8 21-5	33-0 29-0	35-2 25-2	27-3 24-6
Total	46-1 41-9	66-7 56-3	71-1 50-8	52-0 46-0
Average	23-05 20-95	33-35 28-15	35-55 25-4	26-0 23-0
Percentage of Fat	4-25 5-72	4-59 5-16	3-59 4-74	5-08 4-56
Composition of Solids other than Fat	9-07 7-66	8-65 8-42	9-01 8-84	8-78 8-28
the Milk. Total Solids	13-32 13-38	13-24 13-58	12-60 13-58	13-86 12-84
Actual weight of Fat, in lbs.	0-979 1-20	1-53 1-45	1-37 1-21	1-31 1-05
Calculation of Points multiply by 20...	19-580 24-0	30-60 29-0	25-40 24-2	26-20 21-0
Actual weight of Solids other than Fat, in lbs.	2-08 1-60	2-88 2-37	3-2 2-25	2-28 1-90
Calculation of Points multiply by 4...	8-32 6-4	11-52 9-48	12-8 9-00	9-12 7-6
Points				
For time since Calving	44-00	61-5	61-0	49-0
For weight of Milk (lbs.)	43-6	59-6	49-6	47-2
For weight of Fat (lbs. \times 20)				
For weight of Solids other than Fat (lbs. \times 4)	14-7	21-0	21-8	16-7
Total	102-3	142-1	132-4	112-9
Deductions	10-0	10-0	—	10-0
Points gained...	92-3	132-1	132-4	102-9
Remarks and Awards		2nd Prize Reserve for Desborough Cup	1st Prize Desborough Cup	Highly Commended.

CLASS 1.—DAIRY SHORTHORN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ... Name ...	...	...	...	...	7 Barrington Victorys	8 Waterbrook Hynda and	11 Penwortham Bonny Lady	13 Duchess.
Born ...	...	...	...	...	Nov. 19, 1918, 1,368 Sept. 27, 23	Mar. 20, 1919, 1,421 Sept. 10, 40	Oct. 7, 1918, 1,204 Oct. 5, 15	April 12, 1917, 1,433 Sept. 15, 35
Live weight, in lbs. ...	...	...	...	...	Morn Even 20-5 18-5	Morn Even 25-6 20-5	Morn Even 27-3 23-7	Morn Even 31-6 25-7
Last Calved ...	...	...	...	...	21-5 19-7	26-6 19-6	28-8 23-7	31-1 24-1
Days since Calving ...	...	...	...	...	42-0 38-2	52-2 40-1	56-1 47-4	62-7 49-8
Weight of Milk, 1st day ...	...	...	...	...	21-0 19-1	26-1 20-05	28-05 23-7	31-35 24-9
Weight of Milk, 2nd day ...	...	...	...	...	4-04 5-58	3-98 4-30	3-66 4-24	2-94 3-73
Total ...	...	...	...	...	9-12 8-98	9-36 9-02	8-90 8-72	9-10 9-17
Average ...	...	...	...	...	13-16 14-56	13-34 13-32	11-96 12-96	12-04 12-90
Percentage { Fat ...	...	...	...	...	-848 1-06	1-04 0-86	-858 1-01	0-92 0-93
Composition of { Solids other than Fat	...	...	...	...	16-960 21-2	20-80 17-2	17-160 20-2	18-40 18-6
the Milk. ...	...	...	...	...	1-92 1-72	2-44 1-80	2-50 2-07	2-85 2-28
Actual weight of Fat, in lbs. ...	...	...	...	...	7-68 6-88	9-76 7-2	10-00 8-28	11-40 9-12
Calculation of Points multiply by 20 ...	...	...	...	...	...	...	...	...
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	...	...	...	...
Calculation of Points multiply by 4 ...	...	...	...	...	...	...	...	...
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	40-1	46-2	51-8	56-3
	...	...	...	...	38-2	38-0	37-4	37-0
	...	...	...	...	14-6	17-0	18-3	20-5
	...	...	...	...	92-9	101-2	107-5	113-8
Total ...	...	...	...	...	...	...	...	10-0
Deductions ...	...	...	...	...	...	...	...	...
Points gained ...	...	...	...	...	92-9	101-2	107-5	103-8
Remarks and Awards ...	...	...	...	...	...	Highly Commended.	Reserve and Highly Commended.	Highly Commended.

Class 1.—DAIRY SHORTHORN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ...	...	...	...	...	20
Name ...	...	...	...	...	Waterbrook Rose
Born ...	...	...	...	...	Jan. 21, 1917.
Live weight, in lbs.	...	...	...	...	1,186
Last Calved ...	...	...	...	...	April 29.
Days since Calving	...	...	...	...	174
Weight of Milk, 1st day	...	...	...	...	Morn
Weight of Milk, 2nd day	...	...	...	...	Even
Total	...	...	...	...	29.1 22.7
Average	...	...	...	...	30.1 21.7
Percentage of Fat	...	...	...	...	59.2 44.4
Composition of Solids other than Fat	...	...	...	...	29.6 22.2
the Milk. Total Solids	...	...	...	...	3.18 4.20
Actual weight of Fat, in lbs.	...	...	...	...	9.18 9.22
Calculation of Points multiply by 20...	...	...	...	...	12.36 13.42
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	0.94 0.94
Calculation of Points multiply by 4 ...	...	...	...	...	18.8 18.8
Points	...	...	...	...	2.72 2.06
For time since Calving	...	...	...	...	10.88 8.24
For weight of Milk (lbs.)	...	...	...	...	12.0
For weight of Fat (lbs. × 20)	...	...	...	...	51.8
For weight of Solids other than Fat	...	...	...	...	37.6
(lbs. × 4) ...	...	...	...	...	19.1
Total	...	...	...	...	120.5
Deductions	...	...	...	...	—
Points gained...	...	...	...	...	120.5
Remarks and Awards	...	...	...	...	3rd Prize.

CLASS 2.—DAIRY SHORTHORN COWS (ENTERED IN OR ELIGIBLE FOR COATES' HEED BOOK, OR ITS PEDIGREE SENT FOR SUCH ENTRY PREVIOUS TO THE SHOW. BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921).

Number ...	25	26	27	28
Name ...	Hinchingswoke Harrell.	Llantarnam Dizzy 2nd.	Princess.	Comely Maid 4th.
Born ...	Jan. 7, 1921.	May 5, 1920.	March 8, 1920.	Oct. 8, 1919.
Live weight, in lbs.	1,299	1,303	1,238	1,290
Last Calved ...	Sept. 8.	Sept. 21.	Sept. 20.	June 20.
Days since Calving ...	42	29	30	122
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	23-8 18-8	14-3 13-1	27-0 24-3	25-4 19-3
Total	22-9 19-3	14-7 12-6	27-0 24-6	24-0 21-8
Average ...	46-7 38-1	29-0 25-7	54-0 48-9	49-4 41-1
Percentage of Fat ...	23-35 19-05	14-5 12-85	27-0 24-45	24-7 20-55
Composition of Solids other than Fat	4-22 4-56	2-39 6-47	3-25 4-20	3-77 6-20
the Milk. Total Solids	9-08 9-30	9-59 8-33	9-19 9-08	8-79 8-78
Actual weight of Fat, in lbs.	13-30 13-86	11-98 14-80	12-44 13-28	12-56 14-98
Calculation of Points multiply by 20...	0-982 0-87	0-346 0-83	0-88 1-02	0-930 1-28
Actual weight of Solids other than Fat, in lbs.	19-64 17-4	6-92 16-6	17-60 20-4	18-6 25-6
Calculation of Points multiply by 4 ...	2-12 1-77	1-39 1-07	2-47 2-21	2-17 1-80
Points { For time since Calving ...	8-48 7-08	5-56 4-28	9-88 8-84	8-68 7-2
For weight of Milk (lbs.) ...	0-2	—	—	8-2
For weight of Fat (lbs. × 20)	42-4	27-4	17-5	45-3
For weight of Solids other than Fat (lbs. × 4) ...	37-0	23-5	38-0	44-2
Total ...	15-6	10-8	18-7	15-9
Deductions ...	95-2	60-7	108-2	113-6
Points gained...	—	20-0	—	—
Remarks and Awards ...	95-2	40-7	108-2	113-6
	Highly Commended.		Reserve and Highly Commended.	3rd Prize.

CLASS 2.—DAIRY SHORTHORN COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ...	...	...	...	...	32 Thurham Sheila 2nd	33 Bright Rose.	34 Thornby Patricia.	35 Thornby Dairymaid.
Name ...	...	...	...	...	...	...	...	...
Born ...	...	...	...	...	Dec. 18, 1919. 1,204 Oct. 7. 13	May 22, 1921. 1,194 Sept. 17. 33	June 12, 1920. 1,249 Aug. 28. 53	Oct. 2, 1920. 1,281 Aug. 30. 51
Live weight, in lbs. Last Calved ...	...	...	...	...	...	...	...	...
Days since Calving ...	...	...	...	...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn Even 24.4 21.8	Morn Even 17.7 14.9	Morn Even 24.7 20.8	Morn Even 18.2 16.9
Weight of Milk, 2nd day	...	...	...	...	26.3 21.5	17.9 16.4	25.6 21.4	19.5 15.9
Total ...	...	...	...	...	50.7 43.3	35.6 31.3	50.3 42.2	37.7 32.8
Average ...	...	...	...	...	25.35 21.65	17.8 15.65	25.15 21.1	18.85 16.4
Percentage of Fat ...	...	...	...	...	3.82 5.35	4.11 4.16	3.01 4.09	2.62 4.20
Composition of Solids other than Fat	...	...	...	...	9.60 9.49	9.13 8.82	8.91 8.97	8.84 9.00
the Milk. Total Solids	...	...	...	...	13.42 14.84	13.24 12.98	11.92 13.06	11.46 13.20
Actual weight of Fat, in lbs. ...	...	...	...	...	0.97 1.16	0.732 0.65	0.755 0.86	0.493 0.69
Calculation of Points multiply by 20...	...	...	...	...	19.40 23.20	14.04 13.0	15.10 17.2	9.86 13.8
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	2.43 2.05	1.63 1.38	2.24 1.89	1.67 1.48
Calculation of Points multiply by 4 ...	...	...	...	...	9.72 8.2	6.52 5.52	8.96 7.56	6.68 5.92
For time since Calving	...	...	...	...	—	—	1.3	1.1
For weight of Milk (lbs.)	...	...	...	...	47.0	33.5	46.3	35.3
For weight of Fat (lbs. × 20)	...	...	...	...	42.6	27.6	32.3	23.7
For weight of Solids other than Fat	...	...	...	...	17.0	12.0	16.5	12.6
(lbs. × 4) ...	...	...	...	...	107.6	73.1	96.4	72.7
Total ...	...	...	...	...	—	—	—	10.0
Deductions ...	...	...	...	...	107.6	73.1	96.4	62.7
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 2.—DAIRY SHORTHORN COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	36 Thornley Lady Windsor.	38 Pencoyd Blanche 2nd.	39 Primula 173rd.	40 Plas Power Bridget.
Born ...	...	...	...	...	Nov. 25, 1920. 1,234	April 15, 1920. 1,145	Nov. 6, 1919. 1,409	Feb. 27, 1920. 1,262
Live weight, in lbs. ...	...	...	...	...	Sept. 8. 42	Oct. 1. 19	Sept. 21. 29	May 21. 152
Last Calved ...	...	...	...	...
Days since Calving ...	...	...	...	...
Weight of Milk, 1st day ...	...	...	...	...	Morn Even 20.6 21.1	Morn Even 30.8 26.4	Morn Even 25.9 21.3	Morn Even 11.7 10.5
Weight of Milk, 2nd day ...	...	...	...	...	22.2 19.1	30.6 26.7	25.7 21.8	12.6 10.6
Total ...	...	...	...	...	42.8 40.2	61.4 53.1	51.6 43.1	24.3 21.1
Average ...	...	...	...	...	21.4 20.1	30.7 26.55	25.8 21.55	12.15 10.55
Percentage of Fat ...	...	...	...	...	2.38 4.53	3.23 4.99	4.06 4.70	3.19 5.18
Composition of Solids other than Fat ...	...	...	...	...	8.76 8.57	8.93 8.87	9.28 9.32	8.85 8.84
the Milk. { Total Solids ...	...	...	...	...	11.14 13.10	12.16 13.86	13.34 14.02	12.04 14.02
Actual weight of Fat, in lbs. ...	...	...	...	...	0.510 0.915	0.99 1.33	1.05 1.01	0.386 0.55
Calculation of Points multiply by 20 ...	...	...	...	...	10.2 18.3	19.8 26.6	21.0 20.2	7.72 11.0
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	1.87 1.72	2.74 2.36	2.40 2.00	1.07 0.93
Calculation of Points multiply by 4 ...	...	...	...	...	7.48 6.88	10.96 9.44	9.60 8.00	4.28 3.72
Points { For time since Calving ...	...	...	...	...	.2	—	—	11.2
{ For weight of Milk (lbs.) ...	...	...	...	...	41.5	57.3	47.4	22.7
{ For weight of Fat (lbs. × 20) ...	...	...	...	...	28.5	46.4	41.2	18.7
{ For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	14.4	20.4	17.6	8.0
Total ...	...	...	...	...	84.6	124.1	106.2	60.6
Deductions ...	...	...	...	...	10.0	—	—	—
Points gained ...	...	...	...	...	74.6	124.1	106.2	60.6
Remarks and Awards ...	...	...	...	...		1st Prize. Res. for Shorthorn Society's Prize.	Highly Commended.	

CLASS 2.—DAIRY SHORTHORN COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	...	41 Pias Power Fairy.	42 Lacy Daisy 27th.	43 Thurham Ringlet 14th.
Born ...	...	...	...	...	...	Oct. 4, 1920. 1,479	June 1, 1920. 1,314	Dec. 28, 1919. 1,294
Live weight, in lbs.	...	...	...	...	...	Sept. 4, 46	Sept. 15, 35	Oct. 2, 18
Last Calved	...	...	...	...	...
Days since Calving	...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	...	Morn	Even	Morn
Weight of Milk, 2nd day	...	...	...	...	...	16.4	18.2	29.1
Total	...	...	...	...	...	16.3	20.2	23.7
Average	...	...	...	...	...	32.7	38.4	25.1
Percentage	...	...	...	...	...	42.5	48.8	59.7
Composition of	...	...	...	...	...	21.25	19.2	29.85
the Milk.	...	...	...	...	...	14.8	24.4	24.4
Total Solids	...	...	...	...	...	2.82	3.98	4.07
Actual weight of Fat, in lbs.	...	...	...	...	...	8.80	9.18	5.23
Calculation of Points multiply by 20...	...	...	...	...	...	11.62	13.06	8.95
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	0.460	0.745	9.33
Calculation of Points multiply by 4 ...	...	...	...	...	...	9.2	14.90	13.02
Points	For time since Calving	...	...	...	...	1.42	1.76	14.56
	For weight of Milk (lbs.)	...	...	...	...	5.68	7.04	1.22
	For weight of Fat (lbs. × 20)	...	...	...	...	6	...	1.28
	For weight of Solids other than Fat (lbs. × 4)	...	...	...	...	31.2	...	24.4
Total	...	...	...	...	...	21.6	...	25.6
Deductions	...	...	...	...	...	11.2	...	26.7
Points gained...	...	...	...	...	...	64.6	...	2.27
Remarks and Awards	...	...	...	...	...	10.0	...	10.68
	...	...	...	...	...	54.6	...	9.08

CLASS 3.—DAIRY SHORTHORN HEIFERS (ENTERED IN OR ELIGIBLE FOR COATES' HERD BOOK.
BORN ON OR AFTER 1ST AUGUST, 1921).

Number ... Name ...	...	...	...	...	44 Sudborough Ringlet.	48 White Rose.	51 Flamville Carrie.	52 Greathew Swanne.
Born ...	...	...	...	...	Dec. 1, 1921. 1,114	Feb. 1, 1922. 1,298	Dec. 6, 1921. 1,140	Feb. 5, 1922. 1,122
Live weight, in lbs. ...	...	...	...	...	Sept. 13. 37	Oct. 4. 16	Aug. 26 55	Sept. 14. 36
Last Calved ..	...	...	...	...
Days since Calving ...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	19-0 17-3	14-2 13-6	20-1 17-5	17-3 15-3
Total ...	...	...	...	...	19-7 15-0	15-0 13-9	22-4 16-6	16-7 15-5
Average ...	...	...	...	...	38-7 32-3	29-2 27-5	42-5 34-1	34-0 30-8
Percentage { Fat ...	...	...	...	...	19-35 16-15	14-6 13-75	21-25 17-05	17-0 15-4
Composition of { Solids other than Fat	...	...	...	...	3-22 5-03	3-22 4-06	2-56 3-83	2-60 3-85
the Milk. { Total Solids	...	...	...	...	9-70 9-43	9-18 9-20	9-28 9-43	9-04 9-01
Actual weight of Fat, in lbs. ...	...	...	...	...	12-92 14-46	12-40 13-26	11-84 13-26	11-64 12-86
Calculation of Points multiply by 20...	...	...	...	...	0-621 0-81	0-470 0-56	0-543 0-65	0-443 0-59
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	12-42 16-2	9-4 11-2	10-84 13-0	8-86 11-8
Calculation of Points multiply by 4 ...	...	...	...	...	1-87 1-52	1-34 1-26	1-96 1-60	1-54 1-39
{ For time since Calving	...	...	...	...	7-48 6-08	5-36 5-04	7-84 6-40	6-16 5-56
{ For weight of Milk (lbs.)	...	...	...	...	—	—	1-5	—
{ For weight of Fat (lbs. × 20)	...	...	...	...	35-5	28-4	38-3	32-4
{ For weight of Solids other than Fat	...	...	...	...	28-6	20-6	23-8	20-7
{ (lbs. × 4) ...	...	...	...	...	13-6	10-4	14-2	11-7
Total ...	...	...	...	...	77-7	59-4	77-8	64-8
Deductions ...	...	...	...	...	—	—	10-0	10-0
Points gained...	...	...	...	...	77-7	59-4	67-8	54-8
Remarks and Awards ...	...	...	...	...	1st Prize, Shorthorn Society's Prize.		2nd Prize, Res. for Shorthorn Society's Prize.	

CLASS 4.—DAIRY SHORTHORN COWS (NOT ELIGIBLE FOR CLASSES 1 OR 2).

Number ... Name ...	...	...	...	67 Spot.	69 Choice.	72 Baines	73 Molly.
Born ...	...	...	...	1914.	—	1919	1919
Live weight, in lbs.	...	...	...	1,603	1,422	1,233	1,322
Last Calved ...	...	...	...	Sept. 27.	Sept. 13.	Sept. 20.	Sept. 30.
Days since Calving	...	...	...	23	37	30	20
Weight of Milk, 1st day	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	35-0 31-1	22-3 18-4	20-3 15-4	20-3 17-7
Total	...	...	...	32-4 34-8	20-7 17-3	19-2 15-6	22-1 17-1
Average	...	...	...	67-4 65-9	39-0 35-7	41-5 31-0	42-4 34-8
Percentage { Fat ...	...	...	...	33-7 32-95	19-5 17-85	20-75 15-5	21-2 17-4
Composition { Solids other than Fat	...	...	...	3-20 4-75	2-35 4-63	4-63 7-44	4-66 4-00
the Milk. { Total Solids	...	...	...	8-90 8-79	9-17 9-03	9-35 8-80	8-92 8-64
Actual weight of Fat, in lbs.	...	...	...	12-10 13-54	11-52 13-66	13-98 16-24	13-58 12-64
Calculation of Points multiply by 20...	...	...	...	1-08 1-53	0-459 0-825	0-960 1-12	0-986 0-70
Actual weight of Solids other than Fat, in lbs.	...	...	...	21-6 30-6	9-18 16-5	19-2 22-4	19-72 14-0
Calculation of Points multiply by 4 ...	...	...	...	3-40 2-89	1-78 1-61	1-94 1-37	1-89 1-51
Points { For time since Calving	...	...	...	12-0 11-56	7-12 6-44	7-76 5-48	7-56 6-04
For weight of Milk (lbs.)	...	...	...	—	—	—	—
For weight of Fat (lbs. × 20)	...	...	...	46-7	37-4	36-3	38-6
For weight of Solids other than Fat	...	...	...	52-2	25-7	41-6	33-7
(lbs. × 4) ...	...	...	...	23-6	13-6	13-2	13-8
Total ...	...	...	...	142-5	76-7	91-1	85-9
Deductions	...	...	...	—	10-0	—	—
Points gained...	...	...	...	142-5	66-7	91-1	85-9
Remarks and Awards ...	...	...	...	1st Prize Shorthorn Association's Prize	—	—	—

CLASS 4.—DAIRY SHORTHORN COWS (NOT ELIGIBLE FOR CLASSES 1 OR 2)—Continued.

Number ... Name ...	...	...	...	74 Daisy.	75 Dolly.	76 Lady Wilson 3rd.	77 Sally.
Born ...	...	...	...	Oct. 1916.	Oct. 1918	1918	1919.
Live weight, in lbs.	...	...	...	1,491	1,333	1,574	1,367
Last Calved ...	...	...	...	Aug. 26.	Oct. 4.	Oct. 6.	Sept. 30.
Days since Calving	...	...	...	55	16	14	20
Weight of Milk, 1st day	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	16-0 13-8	19-4 16-9	28-2 23-7	24-0 23-1
Total	...	...	...	16-2 12-7	19-9 17-8	28-8 24-5	25-5 22-8
Average	...	...	...	32-2 26-5	39-3 34-7	57-0 48-2	49-5 45-9
Percentage { Fat ...	...	...	...	16-1 13-25	19-65 17-35	28-5 24-1	24-75 22-95
Composition of { Solids other than Fat	...	...	...	2-86 2-84	3-82 5-87	3-95 4-45	3-22 5-49
the Milk. { Total Solids	...	...	...	8-06 8-16	9-58 9-83	9-31 9-25	9-58 9-21
Actual weight of Fat, in lbs.	...	...	...	10-92 11-00	13-40 15-70	13-26 13-70	12-80 14-70
Calculation of Points multiply by 20...	...	...	...	0-461 0-375	0-749 1-02	1-13 1-08	0-795 1-26
Actual weight of Solids other than Fat, in lbs.	...	...	...	9-22 7-40	14-98 20-4	22-6 21-6	15-90 25-2
Calculation of Points multiply by 4 ...	...	...	...	1-30 1-08	1-88 1-72	2-65 2-23	2-36 2-11
Points { For time since Calving	...	...	...	5-2 4-32	7-52 6-88	10-60 8-92	9-44 8-44
For weight of Milk (lbs.)	...	...	...	1-5	—	—	—
For weight of Fat (lbs. × 20)	...	...	...	29-4	37-0	52-6	47-7
For weight of Solids other than Fat	...	...	...	16-6	35-4	44-2	41-1
(lbs. × 4) ...	...	...	...	9-5	14-4	19-5	17-9
Total ...	...	...	...	57-0	86-8	116-3	106-7
Deductions	...	...	...	40-0	—	—	—
Points gained...	...	...	...	17-0	86-8	116-3	106-7
Remarks and Awards ...	...	...	...	...	...	2nd Prize. Reserve for Shorthorn Association's Prize.	...

CLASS 4.—DAIRY SHORTHORN COWS (NOT ELIGIBLE FOR CLASSES 1 OR 2)—Continued.

Number ... Name ...	...	...	...	...	86 Model.	87 Princess.	88 Cowin.
Born ...	...	...	...	...	1919.	1919.	1919.
Live weight, in lbs.	...	...	...	...	—	—	—
Last Calved ...	...	...	...	...	Sept. 30,	Sept. 17,	Oct. 2,
Days since Calving	...	...	...	...	20	33	18
Weight of Milk, 1st day	...	...	...	...
Weight of Milk, 2nd day	...	...	...	...
Total ...	...	...	...	...
Average ...	...	...	...	...
Percentage { Fat ... Composition of { Solids other than Fat the Milk. { Total Solids	...	...	...	...
Actual weight of Fat, in lbs. ...	...	...	...	...
Calculation of Points multiply by 20...	...	...	...	...
Actual weight of Solids other than Fat, in lbs.	...	...	...	...
Calculation of Points multiply by 4 ...	...	...	...	...
Points { For time since Calving For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4)	...	...	...	...
Total ...	...	...	...	...
Deductions ...	...	...	...	...
Points gained...	...	...	...	...
Remarks and Awards ...	...	...	...	...	Disqualified.	Disqualified.	Disqualified.

CLASS 6.—LINCOLN RED SHORTHORN COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK OF THE LINCOLNSHIRE RED SHORTHORN ASSOCIATION).

Number ... Name ...	106 Sibsey Rose.	108 Langford Pansel 18th.	110 Bendish Cherry 2nd.	113 Sothorn Mystic.
Born ...	Sept. 4, 1913. 1,374 June 7. 135	Nov. 14, 1919. 1,444 Oct. 6. 14	June 1, 1915. 1,446 Sept. 3. 47	May 26, 1918. 1,409 June 14. 128
Lave weight, in lbs. ...	Morn Even 21-2 22-2 21-4 20-1 42-6 42-3 21-3 21-15	Morn Even 22-0 18-1 21-3 17-9 43-3 36-0 21-65 18-0	Morn Even 26-2 21-5 28-6 22-8 54-8 44-3 27-4 22-15	Morn Even 30-8 22-1 28-7 22-0 59-5 44-1 29-75 22-05
Weight of Milk, 1st day ...	1-97 5-30	3-95 5-56	2-49 3-70	3-06 3-61
Weight of Milk, 2nd day ...	8-81 8-84	9-61 9-56	9-01 8-38	8-86 8-91
Total ...	10-78 14-14	13-56 15-12	11-50 12-08	11-94 12-52
Average ...	0-420 1-12	0-85 1-00	0-681 0-82	0-920 0-80
Percentage { Fat ...	8-4 22-4	17-0 20-0	13-62 16-4	18-4 16-0
Composition of { Solids other than Fat	1-88 1-87	2-07 1-72	2-48 1-86	2-65 1-98
the Milk. { Total Solids	7-52 7-48	8-28 6-88	9-92 7-44	10-60 7-92
Actual weight of Fat, in lbs. ...	9-5	—	0-7	8-8
Calculation of Points multiply by 20 ...	42-5	39-7	49-6	51-8
Actual weight of Solids other than Fat, in lbs.	30-8	37-0	30-0	34-4
Calculation of Points multiply by 4 ...	15-0	15-2	17-4	18-5
Points { For time since Calving ...	97-8	91-9	97-7	113-5
{ For weight of Milk (lbs.) ...	10-0	—	20-0	—
{ For weight of Fat (lbs. × 20) ...	87-8	91-9	77-7	113-5
{ For weight of Solids other than Fat (lbs. × 4) ...	Total ...	Total ...	Total ...	Total ...
{ Deductions ...	Points gained...	Points gained...	Points gained...	Points gained...
Remarks and Awards ...	...	...	...	2nd Prize.

CLASS 6.—LINCOLN RED SHORTHORN COWS—Continued.

Number Name	...	...	...	...	...	114 Southern Tulp.	116 Burton Ruby 23rd.		117 Burton Ruby Spok 14th.	119 Burton Ethel 8th.
Born	...	...	...	...	...	May 14, 1918, 1,511	April 29, 1916, 1,534	Sept. 7, 1915, 1,370	Aug. 22, 1920, 1,252	
Live weight, in lbs.	...	...	...	...	...	Sept. 26, 24	Sept. 1, 49	May 11, 162	Sept. 1, 49	
Last Calved	...	...	...	...	...
Days since Calving	...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even	
Weight of Milk, 2nd day	...	...	...	...	...	22-6 19-7	29-9 25-0	28-5 21-8	27-9 23-5	
Total	...	...	...	...	...	22-5 19-2	30-6 22-4	28-6 21-0	28-6 23-0	
Average	...	...	...	...	...	45-1 38-9	60-5 47-4	57-1 42-8	56-5 46-5	
Percentage	...	...	...	...	...	22-55 19-45	30-25 23-7	28-55 21-4	28-25 23-25	
Composition of	...	...	...	...	...	2-19 3-36	2-68 3-54	3-69 3-90	2-19 3-21	
the Milk.	...	...	...	...	...	9-25 9-28	8-60 8-42	9-07 9-14	9-33 9-25	
Actual weight of Fat, in lbs.	...	...	...	...	...	11-44 12-64	11-28 11-96	12-76 13-04	11-52 12-46	
Calculation of Points multiply by 20...	...	...	...	...	...	0-49 0-655	0-81 0-84	1-05 0-84	0-619 0-745	
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	9-8 13-10	16-2 16-8	21-0 16-80	12-38 14-9	
Calculation of Points multiply by 4 ...	...	...	...	...	...	2-06 1-81	2-60 2-00	2-58 1-96	2-62 2-15	
Points	...	...	...	...	...	8-24 7-24	10-4 8-00	10-32 7-84	10-48 8-60	
For time since Calving	...	...	...	...	...	—	0-9	12-0	0-9	
For weight of Milk (lbs.)	...	...	...	...	...	42-0	54-0	50-0	51-5	
For weight of Fat (lbs. × 20)	...	...	...	...	...	22-9	33-0	37-8	27-3	
For weight of Solids other than Fat	...	...	...	...	...	15-5	18-4	18-2	19-1	
(lbs. × 4)	...	...	...	...	...	80-4	106-3	118-0	98-8	
Total	...	...	...	...	...	10-0	20-0	—	10-0	
Deductions	...	...	...	...	...	70-4	86-3	118-0	88-8	
Points gained	...	...	...	...	...
Remarks and Awards	...	...	...	...	...			1st Prize.		

CLASS 6—LINCOLN RED SHORTHORN COWS—Continued.

Number ...	...	...	...	...	122
Name ...	...	...	...	...	Langford Queen 7th.
Born ...	...	...	...	...	Jan. 25, 1918.
Live weight, in lbs.	...	...	...	...	1,251
Last Calved ...	...	...	...	...	Sept. 26.
Days since Calving	...	...	...	...	24
Weight of Milk, 1st day	...	...	...	...	Morn
Weight of Milk, 2nd day	...	...	...	...	Even
Total	...	...	...	...	26.9 27.3
Average ...	...	...	...	...	29.5 23.0
Percentage { Fat ...	...	...	...	...	56.4 50.3
Composition of { Solids other than Fat	...	...	...	...	28.2 25.15
the Milk. { Total Solids	...	...	...	...	3.21 6.07
Actual weight of Fat, in lbs. ...	...	...	...	...	11.82 14.28
Calculation of Points multiply by 20...	...	...	...	...	0.905 1.52
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	18.10 30.4
Calculation of Points multiply by 4 ...	...	...	...	...	2.43 2.06
Points { For time since Calving	...	...	...	...	9.72 8.24
{ For weight of Milk (lbs.)	...	...	...	...	53.4
{ For weight of Fat (lbs. \times 20)	...	...	...	...	48.5
{ For weight of Solids other than Fat	...	...	...	...	18.0
(lbs. \times 4) ...	...	...	...	...	119.9
Total ...	...	...	...	...	10.0
Deductions	...	...	...	...	109.9
Points gained...	...	...	...	...
Remarks and Awards ...	...	...	...	...	3rd Prize.

CLASS 7.—LINCOLN RED SHORTHORN HEIFERS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK OF THE LINCOLNSHIRE RED SHORTHORN ASSOCIATION. BORN ON OR AFTER 1ST AUGUST, 1921).

Number ... Name ...	127 Thorney Ladybird.	129 Bendish Charm 6th.	131 Langford Damself 21st.	133 Langford Damself 14th.
Born ...	Nov. 27, 1921. 1,371	Dec. 4, 1921. 1,053	Dec. 9, 1921. 1,130	Sept. 17, 1921. 1,168
Live weight, in lbs. ...	Sept. 29, 21	Sept. 3, 47	Sept. 21, 29	Oct. 3, 17
Last Calved ...	Morn Even	Morn Even	Morn Even	Morn Even
Days since Calving ...	15-2 14-3	15-7 10-9	21-7 19-4	22-7 20-5
Weight of Milk, 1st day ...	16-4 15-1	11-2 10-6	21-2 20-5	23-6 21-4
Weight of Milk, 2nd day ...	31-6 29-4	26-9 21-5	42-9 39-9	46-3 41-9
Total ...	15-8 14-7	13-45 10-75	21-45 19-95	23-15 20-95
Average ...	2-93 4-19	2-74 4-41	3-15 4-66	4-17 5-18
Percentage Composition of the Milk. { Fat ... Solids other than Fat	9-89 9-15	8-86 8-43	9-19 9-12	9-15 9-10
Actual weight of Fat, in lbs. ...	12-82 13-34	11-60 12-84	12-34 13-78	13-32 14-28
Calculation of Points multiply by 20 ...	0-462 0-632	0-367 0-47	0-675 0-96	0-96 1-08
Actual weight of Solids other than Fat, in lbs. ...	9-24 12-4	7-34 9-40	13-50 19-20	19-2 21-6
Calculation of Points multiply by 4 ...	1-56 1-35	1-19 0-90	1-97 1-82	2-12 1-91
Points { For time since Calving ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4) ...	6-24 5-40	4-76 3-60	7-88 7-28	8-48 7-64
Total ...	30-5	24-2	41-21	44-1
Deductions ...	21-6	16-7	32-7	40-8
Points gained ...	11-6	8-4	15-2	16-1
Total ...	63-7	50-0	89-3	101-0
Deductions ...	10-0	26-0	—	—
Points gained ...	53-7	30-0	89-3	101-0
Remarks and Awards ...			2nd Prize.	1st Prize.

CLASS 7.—LINCOLN RED SHORTHORN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1921).—Continued.

Number ... Name ...	...	...	...	...	134 Sharnford Lady.	136 Burton Becky.	137 Burton Bramble 4th.	138 Burton Young Cherry 7th.
Born ...	...	...	...	...	Oct. 21, 1921. 1,153 July 28. 84	Dec. 25, 1921. 1,192 Sept. 4. 46	Sept. 5, 1921. 1,189 Sept. 4. 46	Sept. 15, 1921. 1,237 Sept. 7. 43
Live weight, in lbs.	...	...	...	...	Morn Even 18-6 15-1	Morn Even 13-9 14-6	Morn Even 18-8 14-3	Morn Even 17-2 14-6
Last Calved ...	...	...	...	...	19-2 15-8	16-4 12-7	17-4 14-9	16-8 14-6
Days since Calving	...	...	...	...	37-8 30-9	30-3 27-3	36-2 29-2	34-0 29-2
Weight of Milk, 1st day	...	...	...	...	18-9 15-45	15-15 13-65	18-1 14-6	17-0 14-6
Weight of Milk, 2nd day	...	...	...	...	3-14 4-07	1-06 3-01	3-40 4-68	2-49 4-38
Total	...	...	...	...	9-72 9-15	9-00 8-99	8-94 9-30	9-93 9-26
Average	...	...	...	...	12-86 13-22	10-96 12-00	12-34 13-98	12-42 13-64
Percentage of Fat ...	...	...	...	...	0-592 0-63	0 295 0-41	0-615 0-68	0-424 0-64
Composition of the Milk.	...	...	...	...	11-84 12-60	5-90 8-20	12-30 13-60	8-48 12-80
Actual weight of Fat, in lbs.	...	...	...	...	1-83 1-42	1-36 1-23	1-62 1-36	1-69 1-35
Calculation of Points multiply by 20...	...	...	...	...	7-32 5-68	5-44 4-92	6-48 5-44	6-76 5-40
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	4-4	0-6	0-6	0-3
Calculation of Points multiply by 4 ...	...	...	...	...	34-4	28-8	32-7	31-6
Points { For time since Calving ...	...	...	...	...	24-4	14-1	25-9	21-3
For weight of Milk (lbs.) ...	...	...	...	...	13-0	10-4	11-9	12-2
For weight of Fat (lbs. × 20) ...	...	...	...	...	76-2	53-9	71-1	65-4
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	—	10-0	—	10-0
Total ...	...	...	...	...	76-2	43-9	71-1	55-4
Deductions ...	...	...	...	...	3rd Prize.		Reserve and Highly Commended.	
Points gained...	...	...	...	...
Remarks and Awards ...	...	...	...	...

CLASS 8.—BRITISH FRIESIAN COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)

Number ... Name ...	...	...	...	...	...	142 Testing Torch 13th.	145 Foxfield Cowslip.	148 Hedges Banatratwo.	149 Wellhampton Arianne.
Born ...	...	...	...	...	...	Nov. 25, 1917. 1,430	Sept. 23, 1918. 1,567 Aug. 17. 64	May 2, 1918. 1,475 Sept. 23. 27	Nov. 20, 1918. 1,460 May 22. 151
Live weight, in lbs.	...	...	...	...	...	Morn Even 36.2 26.6	Morn Even 30.8 27.3	Morn Even 35.9 28.3	Morn Even 27.2 23.3
Last Calved ...	...	...	...	...	...	30.7 27.1	31.6 26.0	36.6 27.1	32.2 25.7
Days since Calving	...	...	...	...	...	66.9 53.7	62.4 53.3	72.5 55.4	59.4 49.0
Weight of Milk, 1st day	...	...	...	...	...	33.45 26.85	31.2 26.65	36.25 27.7	29.7 24.5
Weight of Milk, 2nd day	...	...	...	...	...	3.38 4.90	2.39 3.08	4.39 3.38	2.95 3.23
Total	...	...	...	...	...	9.06 9.06	8.61 8.42	9.01 8.92	8.85 8.75
Average	...	...	...	...	...	12.44 13.96	11.00 11.59	13.40 12.30	11.80 11.98
Percentage { Fat ...	...	...	...	...	...	1.14 1.32	.75 .82	1.60 .94	.88 .79
Composition of { Solids other than Fat	...	...	...	...	...	22.8 26.4	15.0 16.4	32.0 18.8	17.6 15.8
the Milk. { Total Solids	...	...	...	...	...	3.03 2.43	2.68 2.25	3.27 2.48	2.64 2.14
Actual weight of Fat, in lbs. ...	...	...	...	...	...	12.12 9.72	10.72 9.0	13.08 9.92	10.56 8.56
Calculation of Points multiply by 20...	...	...	...	...	...	— 60.3	2.4 57.9	— 64.0	11.1 54.2
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	49.2	31.4	50.8	33.4
Calculation of Points multiply by 4 ...	...	...	...	...	...	21.8	19.7	23.0	19.1
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	...	131.3	111.4	137.8	117.8
	...	...	...	...	...	—	20.0	—	10.0
	...	...	...	...	...	131.3	91.4	137.8	107.8
Remarks and Awards ...	...	...	...	...	...	3rd Prize.		1st Prize.	

CLASS 8.—BRITISH FRIESIAN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number Name	153 Blackmore Era 2nd.	154 Beccles Peggotty.	158 Brooklands Hannah.	159 Hatfield Daisy.
Born	April 4, 1915.	Oct. 2, 1916.	Jan. 22, 1917.	Sept. 25, 1916.
Live weight, in lbs.	1,316	1,608	1,425	1,378
Last Calved	Sept. 2.	Sept. 3.	May 13.	Oct. 2.
Days since Calving	48	47	160	18
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	34.7 27.5	45.4 38.6	26.0 20.2	32.2 27.6
Total	35.0 27.6	47.1 39.1	24.7 19.8	34.0 28.8
Average	69.7 55.1	92.5 77.7	50.7 40.0	66.2 56.4
Percentage	34.85 27.55	46.25 38.85	25.35 20.0	33.1 28.2
Composition of	3.45 4.46	2.30 3.27	2.55 3.29	2.92 4.50
the Milk. { Solids other than Fat	8.77 8.74	8.42 7.95	8.59 8.57	9.40 9.68
{ Total Solids	12.22 13.20	10.72 11.22	11.14 11.86	12.32 14.18
Actual weight of Fat, in lbs.	1.21 1.23	1.06 1.27	.65 .66	.96 1.26
Calculation of Points multiply by 20...	24.2 24.6	21.2 25.4	13.0 13.2	19.2 25.2
Actual weight of Solids other than Fat, in lbs.	3.07 2.42	3.91 3.08	2.16 1.71	3.12 2.725
Calculation of Points multiply by 4	12.28 9.68	15.64 12.32	8.64 6.84	12.48 10.90
Points { For time since Calving	.8	.7	12.0	—
{ For weight of Milk (lbs.)	62.4	85.1	45.4	61.3
{ For weight of Fat (lbs. × 20)	48.8	46.6	26.2	44.4
{ For weight of Solids other than Fat (lbs. × 4)	22.0	28.0	15.5	23.4
Total	134.0	160.4	99.1	129.1
Deductions	—	30.0	10.0	10.0
Points gained	134.0	130.4	89.1	119.1
Remarks and Awards	2nd Prize.	Reserve and highly commended.		Highly commended.

CLASS 8.—BRITISH FRIESIAN COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ...	...	...	...	...	160
Name ...	...	...	...	...	Hadham Duchess.
Born ...	...	...	...	...	Aug. 18, 1918.
Live weight, in lbs.	...	...	...	...	1,395
Last Calved ...	...	...	...	...	Sept 15.
Days since Calving ...	...	...	...	...	35
Weight of Milk, 1st day	...	...	...	...	Morn Even
Weight of Milk, 2nd day	...	...	...	...	33-4 33-9
Total ...	...	...	...	...	33-9 26-7
Average ...	...	...	...	...	67-3 60-6
Percentage { Fat ...	...	...	...	...	33-65 30-3
Composition of { Solids other than Fat	...	...	...	...	2-58 4-78
the Milk. { Total Solids	...	...	...	...	8-90 8-74
Actual weight of Fat, in lbs. ...	...	...	...	...	11-48 13-52
Calculation of Points multiply by 20...	...	...	...	...	-87 1-45
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	17-4 29-0
Calculation of Points multiply by 4 ...	...	...	...	...	3-00 2-66
Points { For time since Calving	...	...	...	...	12-00 10-64
{ For weight of Milk (lbs.)	...	...	...	...	64-0
{ For weight of Fat (lbs. × 20)	...	...	...	...	46-4
{ For weight of Solids other than Fat	...	...	...	...	22-6
(lbs. × 4)	...	...	...	...	133-0
Total ...	...	...	...	...	10-0
Deductions	...	...	...	...	123-0
Points gained...	...	...	...	...	Highly commended.
Remarks and Awards ...	...	...	...	...

CLASS 9.—BRITISH FRIESIAN COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN AFTER 1st AUGUST, 1919, AND PREVIOUS TO 1st AUGUST, 1921).

Number ...	...	...	...	...	164	165	166	167
Name ...	...	...	...	...	Teeline Skyhawk Ltd.	Northlean Myrtle Queen	Manleyton Imp. 1922 Mann.	Gilston Marks Buttercup
Born	...	...	...	...	Dec. 14, 1919.	June 15, 1920.	Oct. 23, 1920.	Sept. 10, 1920.
Live weight, in lbs.	...	...	...	...	1,494	1,582	1,317	1,346
Last Calved	...	...	...	...	Sept. 18.	July 22.	Aug. 11.	July 30.
Days since Calving	...	...	...	...	32	90	70	82
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	39.0 30.4	27.7 25.4	20.5 18.6	23.7 19.4
Total	...	...	...	...	35.5 35.7	27.4 25.7	20.8 18.7	26.3 23.2
Average ...	...	...	...	...	74.5 66.1	55.1 51.1	41.3 37.3	50.0 42.6
Percentage	...	...	...	...	37.25 33.05	27.55 25.55	20.65 18.65	25.0 21.3
Composition of	...	...	...	...	4.03 4.13	4.19 4.11	3.53 3.72	3.24 3.42
the Milk.	...	...	...	...	8.45 8.37	8.85 8.67	8.35 8.68	8.80 8.84
Actual weight of Fat, in lbs.	...	...	...	...	12.48 12.50	13.04 12.78	11.88 12.40	12.04 12.26
Calculation of Points multiply by 20...	...	...	...	...	1.50 1.37	1.16 1.06	.73 .695	.81 .72
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	30.0 27.4	23.2 21.2	14.6 13.9	16.2 14.4
Calculation of Points multiply by 4 ...	...	...	...	...	3.16 2.76	2.44 2.22	1.72 1.62	2.20 1.87
Points	...	...	...	...	12.64 11.04	9.76 8.88	6.88 6.48	8.80 7.48
For time since Calving	...	...	...	...	—	5.0	3.0	4.2
For weight of Milk (lbs.)	...	...	...	...	70.3	53.1	39.3	46.3
For weight of Fat (lbs. × 20)	...	...	...	...	57.4	44.4	28.5	30.6
For weight of Solids other than Fat	...	...	...	...	23.7	18.6	13.4	16.3
(lbs. × 4) ...	...	...	...	...	151.4	121.1	84.2	97.4
Total ...	...	...	...	...	20.0	—	10.0	—
Deductions	...	...	...	...	131.4	121.1	74.2	97.4
Points gained...	...	...	...	...	2nd Prize.	Highly Commended.	Highly Commended.	Highly Commended.
Remarks and Awards ...	...	...	...	...

CLASS 9.—BRITISH FRIESIAN COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	168 Gilston Roter-Souvenir	170 Hedges Albert's Garter.	172 Hedges Bos-Fair Princess.	174 Kingwood Ceces Bridesmaid.
Born ...	...	...	...	July 4, 1920.	Oct. 23, 1919.	Jan. 25, 1920.	Oct. 14, 1919.
Live weight, in lbs.	...	...	...	1,267	1,468	1,420	1,494
Last Calved ...	...	...	...	Sept. 14.	Sept. 18	Sept. 27.	Sept. 21.
Days since Calving	...	...	...	36	32	23	29
Weight of Milk, 1st day	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	22-0 18-5	25-1 21-0	25-6 20-9	28-9 24-0
Total	...	...	...	24-5 21-9	24-2 20-1	26-4 21-0	28-2 23-0
Average ...	...	...	...	46-5 40-4	49-3 41-1	52-0 41-9	57-1 47-0
Percentage { Fat ...	...	...	...	23-25 20-2	24-65 20-55	26-0 20-95	28-55 23-5
Composition of { Solids other than Fat	...	...	...	3-95 3-58	3-99 4-22	3-56 3-76	4-05 4-42
the Milk. { Total Solids	...	...	...	8-95 8-56	8-93 8-90	9-30 9-20	9-37 9-22
Actual weight of Fat, in lbs. ...	...	...	...	12-90 12-14	12-92 13-12	12-86 12-96	13-42 13-64
Calculation of Points multiply by 20...	...	...	...	-92 -72	-98 -87	-925 -785	1-16 1-04
Actual weight of Solids other than Fat, in lbs.	...	...	...	18-1 14-4	19-6 17-4	18-5 15-7	23-2 20-8
Calculation of Points multiply by 4 ...	...	...	...	2-08 1-73	2-21 1-84	2-43 1-91	2-67 2-16
Points { For time since Calving	...	...	...	8-32 6-92	8-84 7-36	9-72 7-64	10-68 8-64
{ For weight of Milk (lbs.)	...	...	...	—	—	—	—
{ For weight of Fat (lbs. × 20)	...	...	...	43-5	45-2	47-0	52-1
{ For weight of Solids other than Fat	...	...	...	32-8	37-0	34-2	44-0
(lbs. × 4) ...	...	...	...	15-2	16-2	17-4	19-3
Total ...	...	...	...	91-5	98-4	98-6	115-4
Deductions	...	...	...	—	—	—	—
Points gained...	...	...	...	91-5	98-4	98-6	115-4
Remarks and Awards ...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 9.—BRITISH FRIESIAN COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—*Continued.*

Number ... Name ...	175 Leethill Abigail.	176 Saturn May 2nd.	177 Kneebworth Yucca, Milkmaid.	181 Hamels Allcen.
Born ...	Mar. 30, 1920.	Sept. 1, 1919.	Sept. 5, 1919.	Oct. 19, 1919.
Live weight, in lbs ...	1,277	1,388	1,467	1,248
Last Calved ...	Aug. 16.	Oct. 6.	Sept. 19.	Aug. 23.
Days since Calving ...	65	14	31	58
Weight of Milk, 1st day ...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day ...	27.1 22.7	33.6 36.8	34.6 26.8	27.6 25.4
Total ...	26.6 25.9	38.1 31.5	28.2 25.1	29.9 23.0
Average ...	53.7 48.6	76.9 65.1	62.8 51.9	57.5 48.4
Percentage { Fat ...	26.85 24.3	38.45 32.55	31.4 25.95	28.75 24.2
Composition of { Solids other than Fat ...	5.77 3.58	3.77 4.10	3.24 4.51	3.32 3.80
the Milk. { Total Solids ...	9.19 8.66	9.47 9.18	8.96 8.75	8.80 8.72
Actual weight of Fat, in lbs. ...	14.96 12.24	13.24 13.28	12.20 13.26	12.12 12.52
Calculation of Points multiply by 20 ...	1.55 .87	1.45 1.34	1.02 1.17	0.96 0.92
Actual weight of Solids other than Fat, in lbs. ...	31.0 17.4	29.0 26.8	20.4 23.4	19.2 18.4
Calculation of Points multiply by 4 ...	2.47 2.11	3.65 3.00	2.82 2.27	2.52 2.12
Points { For time since Calving ...	9.88 8.44	14.60 12.00	11.28 9.08	10.08 8.48
For weight of Milk (lbs.) ...	2.5	71.0	—	1.8
For weight of Fat (lbs. × 20) ...	51.2	55.8	57.4	53.0
For weight of Solids other than Fat ...	48.4	—	43.8	37.6
(lbs. × 4) ...	18.3	26.6	20.4	18.6
Total ...	120.4	153.4	121.6	111.0
Deductions ...	—	—	—	—
Points gained ...	120.4	153.4	121.6	111.0
Remarks and Awards ...	Highly Commended.	1st Prize. Reserve for Gold Medal. Shirley Cup. Reserve for Spencer Cup.	Reserve and Highly Commended.	Highly Commended.

CLASS 9.—BRITISH FRIESIAN COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921) —Continued.

Number ... Name ...	...	...	...	182 Hamels Beryl.	184 Franks Damson.	186 Thurston Lilac.	187 Fentremorgan Iona.
Born ...	...	...	...	Nov. 18, 1919. 1,254	Oct. 9, 1919. 1,188	Jan. 2, 1921. 1,226	Dec. 10, 1920. 1,300
Live weight, in lbs.	...	...	...	Sept 3.	Sept. 21.	Sept. 17.	July 14.
Last Calved ...	...	...	...	47	29	33	98
Days since Calving	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day	...	...	...	32.2 24.7	26.6 24.4	25.6 22.8	27.0 21.6
Weight of Milk, 2nd day	...	...	...	30.4 27.8	28.0 23.6	25.8 23.0	28.9 22.8
Total	...	...	...	62.6 52.5	54.6 48.0	51.4 45.8	55.9 44.4
Average ...	...	...	...	31.3 26.25	27.3 24.0	25.7 22.9	27.95 22.2
Percentage { Fat ...	...	...	...	4.41 4.18	3.84 3.85	2.79 2.02	4.36 4.16
Composition of { Solids other than Fat	...	...	...	8.75 8.90	8.38 8.03	9.17 8.92	8.96 9.02
the Milk. { Total Solids	...	...	...	13.16 13.08	12.22 11.88	11.96 11.84	13.32 13.18
Actual weight of Fat, in lbs. ...	...	...	...	1.38 1.10	1.05 0.92	0.72 0.67	1.22 0.93
Calculation of Points multiply by 20...	...	...	...	27.6 22.0	21.0 18.4	14.4 13.4	24.4 18.6
Actual weight of Solids other than Fat, in lbs.	...	...	...	2.74 2.34	2.29 1.92	2.36 2.05	2.50 2.01
Calculation of Points multiply by 4 ...	...	...	...	10.96 9.36	9.16 7.68	9.44 8.20	10.00 8.04
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4)	...	...	...	0.7	—	—	5.8
	...	...	...	57.6	51.3	48.6	50.2
	...	...	...	49.6	39.4	27.8	43.0
	...	...	...	20.3	16.8	17.6	18.0
Total ...	...	...	...	128.2	107.5	94.0	117.0
Deductions ...	...	...	...	—	20.0	20.0	—
Points gained...	...	...	...	128.2	87.5	74.0	117.0
Remarks and Awards ...	...	...	...	3rd Prize.	—	—	Highly Commended.

CLASS 10—BRITISH FRIESIAN HEIFERS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN ON OR AFTER 1ST AUGUST, 1921).

Number ... Name ...	...	...	...	...	188 Froxfield Ruby.	190 Hedges Dairy Girl.	191 Felhampton Evangeline.	194 Uppminster Bulls.
Born ...	...	...	...	...	Jan. 3, 1922. 1,328	Feb. 28, 1922. 1,158	May 18, 1922. 1,275	Oct. 12, 1921. 1,130
Live weight, in lbs.	...	...	...	...	Sept. 17. 33	Aug. 12. 69	Sept. 29. 21	July 22. 90
Last Calved ...	...	...	...	...	...	...	...	...
Days since Calving	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day	...	...	...	...	24.0 22.1	17.4 12.8	21.2 20.5	21.8 18.2
Weight of Milk, 2nd day	...	...	...	...	22.7 19.3	16.8 12.4	21.8 20.9	20.8 17.7
Total	...	...	...	...	46.7 41.4	34.2 25.2	43.0 41.4	42.6 35.9
Average ...	...	...	...	...	23.35 20.7	17.1 12.6	21.5 20.7	21.3 17.95
Percentage { Fat ...	...	...	...	...	3.85 3.82	3.93 3.50	3.30 3.86	2.63 2.87
Composition of { Solids other than Fat	...	...	...	...	9.61 9.10	9.23 9.40	9.50 9.34	8.89 8.50
the Milk. { Total Solids	...	...	...	...	13.46 12.92	13.16 12.90	12.80 13.20	11.52 11.36
Actual weight of Fat, in lbs.	...	...	...	...	0.90 0.79	0.67 0.44	0.71 0.80	0.56 0.515
Calculation of Points multiply by 20...	...	...	...	...	18.0 15.8	13.4 8.80	14.2 16.0	11.2 10.3
Actual weight of Solids other than Fat, in lbs	...	...	...	...	2.25 1.89	1.58 1.19	2.05 1.91	1.90 1.52
Calculation of Points multiply by 4 ...	...	...	...	...	9.00 7.56	6.32 4.76	8.20 7.73	7.60 6.08
Points { For time since Calving	...	...	...	...	44.1	29	42.2	39.3
{ For weight of Milk (lbs.)	...	...	...	...	33.8	22.2	30.2	21.5
{ For weight of Fat (lbs. \times 20)	...	...	...	...	16.6	11.1	16.0	13.7
{ For weight of Solids other than Fat	...	...	...	...	94.5	65.9	88.4	79.5
{ (lbs. \times 4) ...	...	...	...	...	94.5	65.9	88.4	79.5
Total ...	...	...	...	...	94.5	65.9	88.4	79.5
Deductions	...	...	...	...	94.5	65.9	88.4	79.5
Points gained...	...	...	...	...	94.5	65.9	88.4	79.5
Remarks and Awards ...	...	...	...	...	3rd Prize.	...	Reserve and Highly Commended.	...

CLASS 10.—BRITISH FRIESIAN HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	...	196 Hamels Delight.	197 Tyddyn Beautiful.
Born ...	...	...	...	...	...	Oct. 11, 1921. 1,434 July 13. 99	April 20, 1922. 1,285 Oct. 3. 17
Live weight, in lbs.	...	...	...	...	...	Morn Even 27-0 20-4	Morn Even 24-7 21-8
Last Calved ...	...	...	...	...	...	25-2 19-8	24-8 22-0
Days since Calving ...	...	...	...	...	...	52-2 40-2	49-5 43-8
Weight of Milk, 1st day	...	...	...	...	...	26-1 20-1	24-75 21-9
Weight of Milk, 2nd day	...	...	...	...	...	3-82 3-29	3-00 4-72
Total	...	...	...	...	...	8-96 8-99	8-96 8-68
Average	...	...	...	...	...	12-80 12-28	11-96 13-40
Percentage of the Milk.	{ Fat Solids other than Fat Total Solids					1-00 0-66	0-74 1-03
Actual weight of Fat, in lbs.	...	...	...	...	...	20-0 13-2	14-8 20-6
Calculation of Points multiply by 20...	...	...	...	...	...	2-35 1-81	2-21 1-91
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	9-40 7-24	8-84 7-64
Calculation of Points multiply by 4 ...	...	...	...	...	...	5-9	—
{ Points	For time since Calving	...	...	...	...	46-2	46-7
	For weight of Milk (lbs.)	...	...	...	...	33-2	35-4
	For weight of Fat (lbs. × 20)	...	...	...	...	16-6	16-5
	For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	101-9	98-6
Total ...	...	...	...	...	...	101-9	98-6
Deductions ...	...	...	...	...	...	—	—
Points gained...	...	...	...	...	...	101-9	98-6
Remarks and Awards ...	...	...	...	...	...	1st Prize.	2nd Prize.

CLASS 12.—DEVON COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK, OR ENTERED IN THE SUPPLEMENTAL REGISTER OF SUCH HERD BOOK).									
Number	...	...	...	...	...	202	203	207	
Name	...	...	...	...	...	Novah.	Petunia.	Gentle.	
Born	...	...	...	...	...	1915.	1918.	—	
Live weight, in lbs.	...	...	...	...	...	1,137	1,068	1,214	
Last Calved	...	...	...	...	...	Aug. 31.	Sept. 14.	Sept. 14.	
Days since Calving	...	...	...	...	...	50	36	36	
Weight of Milk, 1st day	...	...	...	...	...	Morn	Morn	Morn	Even
Weight of Milk, 2nd day	...	...	...	...	...	25-6	14-7	25-7	21-0
Total	...	...	...	...	...	27-3	20-4	25-6	20-4
Average	...	...	...	...	...	52-9	36-0	51-3	41-4
Percentage	...	...	...	...	...	26-45	18-0	25-65	20-7
Composition of	...	...	...	...	...	4-47	5-14	4-63	4-44
the Milk	...	...	...	...	...	9-11	8-84	8-41	8-90
Actual weight of Fat, in lbs.	...	...	...	...	...	13-58	13-98	13-04	13-34
Calculation of Points multiply by 20...	...	...	...	...	...	1-18	0-93	0-74	0-92
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	23-6	18-6	14-8	20-8
Calculation of Points multiply by 4	...	...	...	...	...	2-41	1-59	1-36	2-36
Points	...	...	...	...	...	9-64	6-36	5-44	9-44
For time since Calving	...	...	...	...	...	1-0	—	—	—
For weight of Milk (lbs.)	...	...	...	...	...	47-5	34-1	46-4	—
For weight of Fat (lbs. × 20)	...	...	...	...	...	43-2	33-4	39-2	—
For weight of Solids other than Fat	...	...	...	...	...	17-4	11-8	16-7	—
(lbs. × 4)	...	...	...	...	...	109-1	79-3	102-3	—
Total	...	...	...	...	...	—	10-0	—	—
Deductions	...	...	...	...	...	109-1	69-3	102-3	—
Points gained	...	...	...	...	...	—	—	—	—
Remarks and Awards	...	...	...	...	...	1st Prize.	—	2nd Prize.	—
	...	...	...	...	...	Busk Cup.	—	Reserve for	—
	...	...	...	...	...	—	—	Busk Cup.	—

CLASS 13.—RED POLL COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK,
BORN ON OR PREVIOUS TO 1ST AUGUST, 1919).

Number ...	...	...	...	...	211 Sudbourne Comfit.	212 Basilton Rosalind.	213 Sudbourne Mha.	214 Dallinghoo Pretty.
Name ...	...	...	...	...	...	...	...	...
Born ...	...	...	...	...	Aug. 10, 1916. 1,401	Dec. 20, 1918. 1,154	Nov. 18, 1917. 1,246	April 1, 1916. 1,176
Live weight, in lbs. ...	...	...	...	...	April 9. 194.	Sept. 14. 36	Sept. 30. 20	May 1. 172
Last Calved ...	...	...	...	...	...	...	...	...
Days since Calving ...	...	...	...	...	...	...	...	...
Weight of Milk, 1st day ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day ...	...	...	...	...	21.5 16.8	33.4 28.2	24.9 20.9	23.7 17.9
Total ...	...	...	...	...	19.9 16.8	34.0 27.5	21.7	23.0 18.2
Average ...	...	...	...	...	41.4 33.6	67.4 55.7	53.3 42.6	46.7 36.1
Percentage	...	...	...	...	20.7 16.8	33.7 27.85	26.65 21.3	23.35 18.05
Composition of	...	...	...	...	5.00 4.63	2.46 3.57	4.53 5.38	2.78 3.10
the Milk.	...	...	...	...	9.06 9.21	8.30 8.33	9.47 9.32	8.64 8.68
Actual weight of Fat, in lbs. ...	...	...	...	...	14.06 13.84	10.76 11.90	14.00 14.70	11.42 11.78
Calculation of Points multiply by 20...	...	...	...	...	1.04 0.78	0.83 1.00	1.22 1.15	0.65 0.56
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	20.8 15.6	16.6 20.0	24.4 23.0	13.0 11.2
Calculation of Points multiply by 4 ...	...	...	...	...	1.88 1.55	2.80 2.33	2.53 1.99	2.02 1.57
For time since Calving ...	...	...	...	...	7.52 6.20	11.20 9.32	10.12 7.96	8.08 6.28
For weight of Milk (lbs.) ...	...	...	...	...	12.0	61.6	48.0	12.0
For weight of Fat (lbs. × 20) ...	...	...	...	...	26.4	36.6	47.4	41.4
For weight of Solids other than Fat	...	...	...	...	...	...	...	24.2
(lbs. × 4) ...	...	...	...	...	13.7	20.5	18.1	14.4
Total ...	...	...	...	...	99.6	118.7	113.5	92.0
Deductions ...	...	...	...	...	—	30.0	—	10.0
Points gained...	...	...	...	...	99.6	88.7	113.5	82.0
Remarks and Awards ...	...	...	...	...	...	...	1st Prize. Reserved for Red Poll Cattle Society's Prize.	...

CLASS 13.—RED POLL COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number Name	...	...	...	...	...	215		218		220	
						Harefield	Apricot Ist.	Harefield Dawn.		Day	367th.
Born	...	...	...	...	...	Aug. 12, 1915.		Nov. 8, 1917.		April 10, 1918.	
Live weight, in lbs.	...	...	...	...	...	1,306		1,084		1,024	
Last Calved	...	...	...	...	...	Sept. 24.		Sept. 11.		Sept. 12.	
Days since Calving	...	...	...	...	...	26		39		33	
Weight of Milk, 1st day	...	...	...	...	...	Morn	Even	Morn	Even	Morn	Even
Weight of Milk, 2nd day	...	...	...	...	...	26.6	20.1	29.2	27.2	14.3	13.4
Total	...	...	...	...	...	25.2	19.8	29.4	24.3	16.4	14.1
Average	...	...	...	...	...	51.8	39.9	58.6	51.5	30.7	27.5
Percentage { Fat ...	...	...	...	...	...	25.9	19.95	29.3	25.75	15.55	13.75
Composition of { Solids other than Fat	...	...	...	...	...	4.17	4.79	2.06	3.65	3.82	3.84
the Milk. { Total Solids	...	...	...	...	...	9.05	9.17	9.02	8.67	9.26	8.98
Actual weight of Fat, in lbs.	...	...	...	...	...	13.22	13.96	11.08	12.32	13.08	12.82
Calculation of Points multiply by 20...	...	...	...	...	...	1.08	0.96	0.60	0.94	0.58	0.53
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	21.6	19.2	12.0	18.8	11.6	10.6
Calculation of Points multiply by 4 ...	...	...	...	...	...	2.34	1.83	2.65	2.24	1.42	1.24
Points { For time since Calving	...	...	...	...	...	9.36	7.32	16.60	8.96	5.68	4.96
For weight of Milk (lbs.)	...	...	...	...	...	45.9		55.1		29.1	
For weight of Fat (lbs. × 20)	...	...	...	...	...	40.8		30.8		22.2	
For weight of Solids other than Fat	...	...	...	...	...	16.7		19.6		10.6	
(lbs. × 4) ...	...	...	...	...	...	103.4		105.5		61.9	
Total ...	...	...	...	...	...	—		10.0		—	
Deductions ...	...	...	...	...	...	103.4		95.5		61.9	
Points gained...	...	...	...	...	...	
Remarks and Awards	...	...	...	...	...	2nd Prize.					

CLASS 14.—RED POLL COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921).

Number ... Name ...	...	...	...	...	...	221 Oakdale Fryer.	222 Barwick Gipsy.	223 Seven Springs Quest.	225 White Hill Flight.
Born ...	...	...	...	...	...	July 8, 1920. 1,136	Nov. 27, 1920. 1,011	Feb. 25, 1921. 973	Mar. 5, 1921. 1,182
Last Calved ...	...	...	...	...	...	Sept. 11. 39	Aug. 16. 65	Sept. 13. 37	Oct. 3. 17
Days since Calving	...	...	...	...	...	Morn Even 28-6 19-9	Morn Even 24-5 17-3	Morn Even 23-9 20-5	Morn Even 18-7 16-0
Weight of Milk, 1st day	...	...	...	...	...	24-5 21-3	23-7 21-0	23-8 18-9	19-2 14-8
Weight of Milk, 2nd day	...	...	...	...	...	53-1 41-2	48-2 38-3	47-7 39-4	37-9 30-8
Total ...	...	...	...	...	...	26-55 20-6	24-1 19-15	23-85 19-7	18-95 15-4
Average ...	...	...	...	...	...	2-15 4-19	3-12 3-31	2-45 3-94	4-39 4-48
Percentage { Fat ...	...	...	...	...	...	9-17 8-41	9-12 9-25	8-57 9-00	9-93 9-44
Composition of { Solids other than Fat	...	...	...	...	...	11-32 12-60	12-24 12-56	11-02 12-94	14-32 13-92
the Milk. { Total Solids	...	...	...	...	...	0-57 0-86	0-75 0-63	0-59 0-78	0-83 0-69
Actual weight of Fat, in lbs. ...	...	...	...	...	...	11-4 17-2	15-0 12-6	11-8 15-6	16-6 13-8
Calculation of Points multiply by 20...	...	...	...	...	...	2-44 1-73	2-20 1-77	2-05 1-78	1-89 1-46
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	9-76 6-92	8-80 7-08	8-20 7-12	7-56 5-84
Calculation of Points multiply by 4 ...	...	...	...	...	...	—	2-5	—	—
{ For time since Calving	...	...	...	...	...	47-2	43-3	43-6	34-4
{ For weight of Milk (lbs.)	...	...	...	...	...	28-6	27-6	27-4	30-4
{ For weight of Fat (lbs. × 20)	...	...	...	...	...	16-7	15-9	15-3	13-4
{ For weight of Solids other than Fat	...	...	...	...	...	92-5	89-3	86-3	78-2
{ (lbs. × 4) ...	...	...	...	...	...	20-0	—	10-0	—
Total ...	...	...	...	...	...	72-5	89-3	76-3	78-2
Deductions ...	...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	...	Highly Commended.	—	—	—

CLASS 14.—RED POLL COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	226 Burley Daisy.	227 Sudbourne Sally.	228 Upton Molly.	229 Ferrymore Linnet
Born ...	...	...	...	...	Dec. 16, 1920. 1,149	June 8, 1921. 1,230	July 23, 1920. 906	Dec. 30, 1919. 1,127
Live weight, in lbs.	...	...	...	...	Sept. 29. 21	Feb. 9. 254	Aug. 28. 53	June 29. 113
Last Calved ...	...	...	...	...
Days since Calving ...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	21.3 21.2	12.9 10.3	25.4 17.0	26.5 25.7
Total ...	...	...	...	...	23.3 19.5	13.9 10.6	22.6 17.1	30.6 24.8
Average ...	...	...	...	...	44.6 40.7	26.8 20.9	48.0 34.1	57.1 50.5
Percentage { Fat ...	...	...	...	...	22.3 20.35	13.4 10.45	24.0 17.05	28.55 25.25
Composition of { Solids other than Fat	...	...	...	...	4.01 3.97	5.23 5.20	4.40 4.70	4.19 4.07
the Milk. { Total Solids	...	...	...	...	9.57 9.21	10.03 9.88	9.54 9.32	10.05 9.65
Actual weight of Fat, in lbs.	...	...	...	...	13.58 13.18	15.26 15.08	13.94 14.02	14.24 13.72
Calculation of Points multiply by 20...	...	...	...	...	0.90 0.81	0.70 0.54	1.05 0.85	1.20 1.025
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	18.0 16.2	14.0 10.8	21.0 17.0	24.0 20.5
Calculation of Points multiply by 4 ...	...	...	...	...	2.14 1.88	1.34 1.04	2.28 1.59	2.86 2.44
Points { For time since Calving	...	...	...	...	8.56 7.52	5.36 4.16	9.12 6.36	11.44 9.76
{ For weight of Milk (lbs.)	...	...	...	...	—	12.0	1.3	7.3
{ For weight of Fat (lbs. × 20)	...	...	...	...	42.7	23.9	41.1	53.8
{ For weight of Solids other than Fat	...	...	...	...	34.2	24.8	38.0	44.5
(lbs. × 4) ...	...	...	...	...	16.1	9.5	15.5	21.2
Total ...	...	...	...	...	93.0	70.2	95.9	126.8
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	93.0	70.2	95.9	126.8
Remarks and Awards ...	...	...	...	...	Reserve and Highly Commended.		3rd Prize.	1st Prize. Red Poll Cattle Society's Prize.

CLASS 14.—RED POLL COWS (BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ...	...	...	...	...	...	232 Thornham Rose Leaf H. 21st.	233 Hutton A pricot.
Name ...	...	...	...	...	...	...	...
Born ...	...	...	...	...	...	June 29, 1920. 1,213	Sept. 11, 1919. 1,326
Live weight, in lbs.	...	...	...	...	...	Mar. 21. 213	May 17. 156
Last Calved ...	...	...	...	...	...
Days since Calving	...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	...	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	...	18-1 15-6	23-0 16-7
Total ...	...	...	...	...	...	18-9 15-6	20-9 15-3
Average ...	...	...	...	...	...	37-0 31-2	43-9 32-0
Percentage { Fat ...	...	...	...	...	...	18-5 15-6	21-95 16-0
Composition of { Solids other than Fat	...	...	...	...	...	4-71 4-53	4-67 5-60
the Milk. { Total Solids	...	...	...	...	...	9-93 9-77	9-27 9-34
Actual weight of Fat, in lbs.	...	...	...	...	...	14-64 14-30	13-94 14-94
Calculation of Points multiply by 20...	...	...	...	...	...	0-87 0-71	1-03 0-895
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	17-4 14-2	20-6 17-9
Calculation of Points multiply by 4 ...	...	...	...	...	...	1-82 1-52	2-03 1-5
Points { For time since Calving	...	...	...	...	...	7-28 6-08	8-12 6-0
{ For weight of Milk (lbs.)	...	...	...	...	...	12-0	11-6
{ For weight of Fat (lbs. × 20)	...	...	...	...	...	34-1	38-0
{ For weight of Solids other than Fat	...	...	...	...	...	31-6	38-5
{ (lbs. × 4) ...	...	...	...	...	...	13-4	14-1
Total ...	...	...	...	...	...	91-1	102-2
Deductions	...	...	...	...	...	—	—
Points gained...	...	...	...	...	...	91-1	102-2
Remarks and Awards ...	...	...	...	...	...	Highly Commended.	2nd Prize.

CLASS 15.—RED POLL HEIFERS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK,
BORN ON OR AFTER 1ST AUGUST, 1921).

Number ... Name ...	...	...	...	...	235 Kirton Prize Pepper.	236 Southdown Beltine.	237 Rickmansworth Peashen 2nd.	240 Shotford Lady Mary 5th.
Born ...	...	...	...	...	Aug. 20, 1921. 1,113	Sept. 25, 1921. 1,054	Sept. 12, 1921. 1,100	Feb. 22, 1922. 1,124
Live weight, in lbs. ...	...	...	...	...	July 30. 82	Aug. 30. 51	Sept. 14 36	Sept. 6. 44
Last Calved ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Eve
Days since Calving ...	...	...	...	...	13-5 12-4	20-9 17-0	13-5 11-4	22-3 18-4
Weight of Milk, 1st day ...	...	...	...	...	15-3 13-5	19-5 16-3	13-1 11-6	21-8 18-1
Weight of Milk, 2nd day ...	...	...	...	...	28-8 25-9	40-4 33-3	26-6 23-0	44-1 36-5
Total ...	...	...	...	...	14-4 12-95	20-2 16-65	13-3 11-5	22-05 18-25
Average ...	...	...	...	...	4-18 5-23	3-69 3-75	4-71 5-12	4-46 4-89
Percentage { Fat ...	...	...	...	...	9-58 9-29	9-35 9-11	9-95 9-64	9-08 9-19
Composition of { Solids other than Fat	...	...	...	...	13-76 14-52	13-04 12-86	14-66 14-76	13-54 14-08
the Milk. { Total Solids	...	...	...	...	0-60 0-68	0-75 0-63	0-63 0-69	0-99 0-89
Actual weight of Fat, in lbs. ...	...	...	...	...	12-0 13-6	15-0 12-6	12-6 11-8	19-8 17-8
Calculation of Points multiply by 20...	...	...	...	...	1-38 1-2	1-88 1-52	1-32 1-11	2-01 1-68
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	5-52 4-8	7-52 6-08	5-28 4-44	8-04 6-72
Calculation of Points multiply by 4 ...	...	...	...	...	4-2	1-1	—	0-4
{ For time since Calving ...	...	...	...	...	27-4	36-9	24-8	40-3
{ For weight of Milk (lbs.) ...	...	...	...	...	25-6	27-6	24-4	37-6
{ For weight of Fat (lbs. × 20)	...	...	...	...	10-3	13-6	9-7	14-8
{ For weight of Solids other than Fat	...	...	...	...	67-5	79-2	58-9	93-1
(lbs. × 4)	...	...	...	...	—	—	—	—
Total ...	...	...	...	...	67-5	79-2	58-9	93-1
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	Highly commended.	3rd Prize.	—	—
Remarks and Awards ...	...	...	...	...	...	...	...	1st Prize. Red Poll Cattle Society's Prize.

CLASS 15.—RED POLL HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	241 Shotford Star Duchesse 168th.	243, Ashmoor Mischievous	249 Seven Springs Lucy.	250 White Hill Lily
Born ...	...	...	...	...	July 5, 1922, 1,060	Mar. 7, 1922, 917	Dec. 20, 1921, 1,096	Nov. 25, 1921, 1,080
Live weight, in lbs.	...	...	...	...	Sept. 19, 31	Aug. 18, 63	Aug. 30, 51	July 27, 85
Last Calved ...	...	...	...	...
Days since Calving	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	18-5 15-4	15-8 12-5	19-0 15-9	10-7 9-2
Total	...	...	...	...	19-3 16-1	15-5 12-7	17-2 18-1	10-9 8-4
Average ...	...	...	...	...	37-8 31-5	31-3 25-2	36-2 34-0	21-6 17-6
Percentage	...	...	...	...	18-9 15-75	15-65 12-6	18-1 17-0	10-8 8-8
Composition of	...	...	...	...	4-17 4-23	3-39 4-33	3-99 6-22	4-45 5-33
the Milk.	...	...	...	...	9-15 9-29	8-97 9-11	9-61 9-48	9-45 9-49
Actual weight of Fat, in lbs.	...	...	...	...	13-32 13-52	12-36 13-44	13-60 15-70	13-90 14-82
Calculation of Points multiply by 20...	...	...	...	...	0-79 0-66	0-53 0-545	0-72 1-06	0-48 0-47
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	15-8 13-2	10-6 10-9	14-4 21-2	9-6 9-4
Calculation of Points multiply by 4 ...	...	...	...	...	1-73 1-46	1-40 1-15	1-74 1-61	1-03 8-35
Points	...	...	...	...	6-92 5-84	5 60 4-6	6-96 6-44	4-12 3-34
For time since Calving	...	...	...	...	—	2-3	1-1	4-5
For weight of Milk (lbs.)	...	...	...	...	34-7	28-3	35-1	19-6
For weight of Fat (lbs. × 20)	...	...	...	...	29-0	21-5	35-6	19-0
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	12-8	10-2	13-4	7-5
Total ...	...	...	...	...	76-5	62-3	85-2	50-6
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	76-5	62-3	85-2	50-6
Remarks and Awards ...	...	...	...	...	Reserve and Highly Commended. Reserve for Red Poll Cattle Society's Prize		2nd Prize.	

CLASS 15.—RED POLL HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1921).—Continued.

Number ...	...	...	...	...	...	251
Name ...	...	...	...	...	...	White Hill Bամիշ
Born ...	...	...	...	...	...	Dec. 14, 1921.
Live weight, in lbs.	...	...	...	...	...	994
Last Calved ...	...	...	...	...	...	Sept. 7.
Days since Calving	...	...	...	...	...	43
Weight of Milk, 1st day	...	...	...	...	Morn	Even
Weight of Milk, 2nd day	...	...	...	...	16·3	13·1
Total ...	...	...	...	...	15·8	12·9
Average ...	...	...	...	...	32·1	26·0
Percentage { Fat ...	...	...	...	...	16·05	13·0
Composition of { Solids other than Fat	...	...	...	...	5·06	5·29
the Milk. { Total Solids	...	...	...	...	9·32	9·37
Actual weight of Fat, in lbs.	...	...	...	...	14·38	14·66
Calculation of Points multiply by 20...	...	...	...	...	0·81	0·69
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	16·2	13·8
Calculation of Points multiply by 4 ...	...	...	...	...	1·50	1·22
{ For time since Calving	...	...	...	...	6·0	4·88
{ For weight of Milk (lbs.)	...	...	...	...	0·3	
{ For weight of Fat (lbs. × 20)	...	...	...	...	29·1	
{ For weight of Solids other than Fat (lbs. × 4)	...	...	...	...	30·0	
Total ...	...	...	...	...	10·9	
Deductions	...	...	...	...	70·3	
Points gained...	...	...	...	...	70·3	
Remarks and Awards ...	...	...	...	...	...	Highly Commended.

CLASS 16.—BLUE ALBION COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK).

Number ... Name ...	...	...	...	...	252 Branshall Clover.	254 Poplars Beauty.	255 Bradbourne Sweetpea.	256 Bradbourne Maid.
Born ...	...	...	...	...	— 1,328 Sept. 3. 47	— 1,306 Oct. 4. 16	Sept. 10, 1920. 1,231 Sept. 26. 24	Aug. 6, 1919. 1,298 Oct. 7. 13
Live weight, in lbs.	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Last Calved ...	...	...	...	...	13-8 11-0	25-5 24-1	23-7 17-4	23-1 20-2
Days since Calving	...	...	...	...	17-5 15-2	27-4 22-9	23-4 18-3	25-3 21-7
Weight of Milk, 1st day	...	...	...	...	31-3 26-2	52-9 47-0	47-1 35-7	48-4 41-9
Weight of Milk, 2nd day	...	...	...	...	15-65 13-1	26-45 23-5	23-55 17-85	24-2 20-95
Total ...	...	...	...	...	4-99 6-05	4-91 4-79	4-12 4-38	5-97 5-65
Average ...	...	...	...	...	8-39 8-41	9-55 9-27	9-16 9-42	9-53 9-55
Percentage { Fat ... Composition of { Solids other than Fat the Milk, { Total Solids	...	...	...	...	13-38 14-46	15-46 14-06	13-28 13-80	15-50 15-20
Actual weight of Fat, in lbs. ...	...	...	...	...	0-78 0-80	1-30 1-12	0-97 0-78	1-45 1-18
Calculation of Points multiply by 20...	...	...	...	...	15-6 16-0	26-0 22-4	19-4 15-6	29-0 23-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-32 1-11	2-52 2-17	2-16 1-08	2-32 2-0
Calculation of Points multiply by 4 ...	...	...	...	...	5-28 4-44	10-8 8-68	8-64 6-72	9-28 8-0
For time since Calving	...	...	...	...	0-7	—	—	—
For weight of Milk (lbs.) ...	...	...	...	...	28-8	50-0	41-4	45-2
For weight of Fat (lbs. × 20) ...	...	...	...	...	31-6	48-4	35-0	52-6
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	9-7	18-8	15-4	17-3
Total ...	...	...	...	...	70-8	117-2	91-8	115-1
Deductions	...	...	...	...	20-0	—	—	—
Points gained...	...	...	...	...	50-8	117-2	91-8	115-1
Remarks and Awards ...	...	...	...	...	2nd Prize.			
	...	...	...	...	3rd Prize.			

CLASS 18.—AYRSHIRE COWS.

Number Name	...	...	...	...	...	267 Anchorina Yellow Eate 12th.	268 Netherton Queen Greenfield 4th.	269 Cargen Holm Sally 3rd.	271 Shewalton Minnie Violet 3rd
Born	...	...	...	...	...	Jan 5, 1915. 1,121 Sept. 5. 45	Jan. 28, 1920. 1,385 Oct. 1. 19	Aug. 10, 1919. 1,177 Sept. 25. 25	Dec. 4, 1916. 1,295 Sept. 21. 29
Live weight, in lbs.	...	...	...	...	...	Morn Even 27-6 21-1	Morn Even 33-2 27-1	Morn Even 37-4 31-5	Morn Even 30-1 23-3
Last Calved	...	...	...	...	...	26-5 19-8	30-1 26-3	37-1 31-7	28-8 24-7
Days since Calving	...	...	...	...	...	54-1 40-9	63-3 53-4	74-5 63-2	58-9 48-0
Weight of Milk, 1st day	...	...	...	...	...	27-05 20-45	31-65 26-7	37-25 31-6	29-45 24-0
Weight of Milk, 2nd day	...	...	...	...	...	4-66 5-06	4-25 6-19	3-84 5-63	4-75 4-87
Average	...	...	...	...	...	9-06 8-98	9-51 9-45	9-06 9-10	9-79 9-51
Percentage	...	...	...	...	...	13-72 14-04	13-76 15-64	12-90 14-76	14-54 14-38
Composition of	...	...	...	...	...	1-26 1-03	1-35 1-645	1-44 1-78	1-40 1-17
the Milk.	...	...	...	...	...	25-2 20-6	27-0 32-9	28-8 35-6	28-0 23-4
Actual weight of Fat, in lbs.	...	...	...	...	...	2-46 1-84	3-02 2-525	3-37 2-87	2-88 2-29
Calculation of Points multiply by 20...	...	...	...	...	...	9-84 7-36	12-08 10-10	13-48 11-48	11-52 9-16
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	...	...	...	...
Calculation of Points multiply by 4 ...	...	...	...	...	...	...	...	...	...
Points	...	...	...	...	...	...	...	...	...
For time since Calving	...	...	...	...	...	...	...	...	...
For weight of Milk (lbs.)	...	...	...	...	...	47-5	58-4	68-9	53-5
For weight of Fat (lbs. × 20)	...	...	...	...	...	45-8	59-9	64-4	51-4
For weight of Solids other than Fat	...	...	...	...	...	17-2	22-2	25-0	20-7
(lbs. × 4) ...	...	...	...	...	...	111-0	140-5	158-3	125-6
Total ...	...	...	...	...	...	...	...	...	...
Deductions	...	...	...	...	...	...	...	...	...
Points gained...	...	...	...	...	...	111-0	140-5	168-3	125-6
Remarks and Awards	...	...	...	...	...	3rd Prize.	3rd Prize.	...	Highly Commended.

CLASS 18.—AYRSHIRE COWS.—Continued.

Number ... Name ...	...	...	...	272 Nether Craig Farm.	273 Lesonscock Dalnity Mill.	275 Buntomhill Baire 2nd.	277 Auchinbay Mrg.
Born ...	...	...	...	Dec. 25, 1918.	Mar. 23, 1918.	Oct. 26, 1919.	Feb. 15, 1918.
Live weight, in lbs.	...	...	...	1,258	1,460	1,103	1,178
Last Calved ...	...	...	...	Sept. 28.	Sept. 12.	Oct. 2.	Sept. 19.
Days since Calving	...	...	...	22	38	18	31
Weight of Milk, 1st day	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	33-9 30-8	28-0 26-0	28-9 25-6	36-2 29-2
Total	...	...	...	32-0 27-4	30-3 27-1	33-6 27-1	35-7 31-4
Average	...	...	...	65-9 58-2	58-3 53-1	62-5 52-7	71-9 60-6
Percentage { Fat ...	...	...	...	32-95 29-1	29-15 26-55	31-25 26-35	35-95 30-3
Composition of { Solids other than Fat	...	...	...	3-38 3-75	4-44 6-11	3-82 4-65	4-22 3-82
the Milk. { Total Solids	...	...	...	9-52 9-19	9-48 9-11	9-86 9-45	9-50 9-38
Actual weight of Fat, in lbs. ...	...	...	...	12-90 12-94	13-92 15-22	13-68 14-10	13-72 13-20
Calculation of Points multiply by 20...	...	...	...	1-12 1-09	1-28 1-62	1-20 1-22	1-52 1-16
Actual weight of Solids other than Fat, in lbs.	...	...	...	22-4 21-8	25-6 32-4	24-0 24-4	30-4 23-2
Calculation of Points multiply by 4 ...	...	...	...	3-14 2-67	2-76 2-425	3-08 2-49	3-41 2-84
{ For time since Calving	...	...	...	12-56 10-68	11-04 9-7	12-32 9-96	13-64 11-36
{ For weight of Milk (lbs.)	...	...	...	62-1	55-7	57-6	66-3
{ For weight of Fat (lbs. × 20)	...	...	...	44-2	58-0	48-4	53-6
{ For weight of Solids other than Fat (lbs. × 4)	...	...	...	23-2	20-7	22-3	25-0
Total ...	...	...	...	129-5	134-4	128-3	144-9
Deductions ...	...	...	...	—	—	—	—
Points gained...	...	...	...	129-5	134-4	128-3	144-9
Remarks and Awards ...	...	...	...	Highly Commended.	Reserve and Highly Commended.	Highly Commended.	2nd Prize. Reserve for Rowallan Cup.

CLASS 19.—AYRSHIRE HEIFERS (REGISTERED OR ELIGIBLE FOR REGISTRATION WITH A NUMBER IN THE HERD BOOK OR IN THE APPENDICES. BORN ON OR AFTER 1ST AUGUST, 1921).

Number ... Name ...	278 Rowallan Augusta 3rd.	279 Garraff Miss Ethna.	283 Cargen Holm Maud 18th.	284 Cargen Holm Mies Robb 12th.
Born ...	Mar. 12, 1922.	Dec. 20, 1921.	Jan. 28, 1922.	Mar. 2, 1922.
Live weight, in lbs.	1,187	1,181	982	1,022
Last Calved ...	Sept. 14.	Oct. 3.	Oct. 6.	Oct. 7.
Days since Calving	36	17	14	13
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	21-2 19-4	23-8 19-6	23-3 20-7	23-1 18-6
Total	22-2 19-6	23-6 20-2	24-3 21-1	23-5 19-2
Average ...	43-4 39-0	47-4 39-8	48-2 41-8	46-6 37-8
Percentage { Fat ...	21-7 19-5	23-7 19-9	24-1 20-9	23-3 18-9
Composition of { Solids other than Fat	3-85 4-83	4-43 5-40	4-52 4-97	4-48 5-45
the Milk. { Total Solids	9-19 8-91	9-31 9-44	9-26 9-61	9-76 9-95
Actual weight of Fat, in lbs. ...	13-04 13-74	13-74 14-84	13-78 14-58	14-24 15-40
Calculation of Points multiply by 20...	0-84 0-94	1-05 1-08	1-09 1-04	1-05 1-03
Actual weight of Solids other than Fat, in lbs.	16-8 18-8	21-0 21-6	21-8 20-8	21-0 20-6
Calculation of Points multiply by 4 ...	2-00 1-74	2-22 1-88	2-23 2-02	2-27 1-88
Points { For time since Calving	8-00 6-96	8-88 7-52	8-92 8-08	9-08 7-52
For weight of Milk (lbs.) ...	41-2*	43-6	45-0	42-2
For weight of Fat (lbs. × 20)	35-6	42-6	42-6	41-6
For weight of Solids other than Fat (lbs. × 4)	15-0	16-4	17-0	16-6
Total ...	91-8	102-6	104-6	100-4
Deductions ...	—	—	—	—
Points gained...	91-8	102-6	104-6	100-4
Remarks and Awards ...	Highly Commended.	3rd Prize.	2nd Prize.	Reserve and Highly Commended.

CLASS 19.—AYRSHIRE HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	285 Cargen Horn Eireola 2nd.	287 Aikkenbar Blue Bell.	289 Bruchag 2nd.	290 Bruchag Victoria 5th.
Born ...	...	...	...	...	Jan. 22, 1922. 1,036	Aug. 19, 1921. 1,116	Feb. 12, 1922. 1,081	Jan. 28, 1922. 1,017
Lave weight, in lbs.	...	...	...	...	Sept. 25. 25	Sept. 28. 22	Sept. 26. 24	Sept. 12. 38
Least Calved ...	...	...	...	...	Morn	Morn	Morn	Morn
Days since Calving	...	...	...	...	Even	Even	Even	Even
Weight of Milk, 1st day	...	...	...	...	24-7 20-5	21-6 18-2	19-2 17-0	18-3 16-4
Weight of Milk, 2nd day	...	...	...	...	25-9 22-4	21-7 18-1	19-2 16-8	18-1 16-0
Total	...	...	...	...	50-6 42-9	43-3 36-3	38-4 33-8	36-4 32-4
Average ...	...	...	...	...	25-3 21-45	21-65 18-15	19-2 16-9	18-2 16-2
Percentage { Fat ...	...	...	...	...	4-05 5-22	4-93 5-40	3-49 4-68	3-85 5-54
Composition of { Solids other than Fat	...	...	...	...	9-33 9-38	9-75 9-94	9-73 9-40	9-93 9-70
the Milk. { Total Solids	...	...	...	...	13-38 14-60	14-68 15-34	13-22 14-08	13-78 15-24
Actual weight of Fat, in lbs.	...	...	...	...	1-03 1-12	1-07 0-98	0-67 0-79	0-70 0-90
Calculation of Points multiply by 20...	...	...	...	...	20-6 22-4	21-4 19-6	13-4 15-8	14-0 18-0
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	2-36 2-01	2-11 1-8	1-86 1-59	1-81 1-57
Calculation of Points multiply by 4 ...	...	...	...	...	9-44 8-04	8-44 7-2	7-44 6-36	7-24 6-28
Points { For time since Calving	...	...	...	...	46-8	39-8	36-1	34-4
{ For weight of Milk (lbs.)	...	...	...	...	43-0	41-0	29-2	32-0
{ For weight of Fat (lbs. × 20)	...	...	...	...	17-5	15-6	13-8	13-5
{ For weight of Solids other than Fat (lbs. × 4)	...	...	...	...	107-3	96-4	79-1	79-9
Total ...	...	...	...	...	—	—	—	—
Deductions ...	...	...	...	...	107-3	96-4	79-1	79-9
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	1st Prize,	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 20.—GUERNSEY COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN ON OR PREVIOUS TO 1ST AUGUST, 1919).

Number ... Name ...	...	...	...	...	299 Lizette of St. Catherine.	300 Sarnia's Tulip 2nd.	302 Lynchaere Ross of Mauvourguis 4th.	303 Hadham Marigold.
Born ...	...	...	...	...	June 20, 1918.	Mar. 29, 1919.	June 25, 1916.	Mar. 21, 1919.
Live weight, in lbs.	...	...	...	...	1,020	938	1,180	977
Last Calved ...	...	...	...	...	June 7.	Sept. 20.	Sept. 19.	Aug. 28.
Days since Calving	...	...	...	...	135	30	31	53
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	16.1 14.2	9.8 9.7	24.5 20.5	13.2 17.8
Total	...	...	...	...	16.3 13.7	11.3 9.2	23.5 19.5	17.5 14.1
Average	...	...	...	...	32.4 27.9	21.1 18.9	48.0 40.0	30.7 31.9
Percentage { Fat ...	...	...	...	...	16.2 13.95	10.55 9.45	24.0 20.0	15.35 15.95
Composition of { Solids other than Fat	...	...	...	...	4.65 5.24	3.44 5.05	4.53 6.23	3.90 7.18
the Milk. { Total Solids	...	...	...	...	9.91 9.36	9.80 9.71	9.33 9.53	9.84 9.06
Actual weight of Fat, in lbs. ...	...	...	...	...	14.56 14.60	13.24 14.76	13.86 15.76	13.74 16.24
Calculation of Points multiply by 20...	...	...	...	...	755 732	86 476	1.09 1.246	60 1.15
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	15.1 14.6	7.2 9.5	20.2 24.9	12.0 23.0
Calculation of Points multiply by 4 ...	...	...	...	...	1.61 1.3	1.04 .92	2.24 1.9	1.51 1.57
Points { For time since Calving	...	...	...	...	6.4 5.2	4.2 3.7	9.0 4.1	6.0 6.3
{ For weight of Milk (lbs.)	...	...	...	...	9.5	—	—	1.3
{ For weight of Fat (lbs. × 20)	...	...	...	...	30.2	20.0	44.0	31.3
{ For weight of Solids other than Fat	...	...	...	...	29.7	16.7	45.1	35.0
(lbs. × 4) ...	...	...	...	...	11.6	7.9	16.6	12.3
Total ...	...	...	...	...	81.0	44.6	105.7	79.9
Deductions	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	81.0	44.6	105.7	79.9
Remarks and Awards ...	...	...	...	...	...	...	1st Prize. Stagenhoe Cup.	...

Class 20.—GUERNSEY COWS (BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ...	...	...	...	...	305
Name ...	...	...	...	...	Pebba Rosette 4th.
Born ...	...	...	...	...	Dec. 20, 1918.
Live weight, in lbs.	...	...	...	...	1,110
Last Calved ...	...	...	...	...	Aug. 21.
Days since Calving	...	...	...	...	60
Weight of Milk, 1st day	...	...	...	...	Morn Even
Weight of Milk, 2nd day	...	...	...	...	18.0 15.6
Total	...	...	...	...	19.9 14.7
Average	...	...	...	...	37.9 30.3
Percentage	...	...	...	...	18.95 15.15
Composition of the Milk.	...	...	...	...	3.80 4.41
Actual weight of Fat, in lbs.	...	...	...	...	8.82 8.89
Calculation of Points multiply by 20...	...	...	...	...	12.62 13.30
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	.72 .67
Calculation of Points multiply by 4 ...	...	...	...	...	14.4 13.4
Points	...	...	...	...	1.67 1.35
For time since Calving	...	...	...	...	6.7 5.4
For weight of Milk (lbs.)	...	...	...	...	2.0
For weight of Fat (lbs. × 20)	...	...	...	...	34.1
For weight of Solids other than Fat (lbs. × 4)	...	...	...	...	27.8
Total	...	...	...	...	12.1
Deductions	...	...	...	...	76.0
Points gained...	...	...	...	...	76.0
Remarks and Awards ...	...	...	...	...

CLASS 21.—GUERNSEY COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921).

Number Name	...	...	...	...	...	306		307	308	309
						Southern Starlette.	Emblem's Enchantress.			Treacy Cloud.
Born	...	...	...	...	...	Dec. 10, 1920. 1,006	Aug. 15, 1920. 974	Feb. 15, 1921. 974	Aug. 29, 1920. 901	
Live weight, in lbs.	...	...	...	...	...	April 5.	Sept. 5.	May 8.	Sept. 1.	
Last Calved	...	...	...	...	...	198	45	165	49	
Days since Calving	...	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even	
Weight of Milk 2nd day	...	...	...	...	...	21-0 17-0	15-2 13-1	16-2 13-2	18-3 16-3	
Total	...	...	...	...	...	23-2 15-8	16-3 12-1	17-2 12-2	17-6 15-0	
Average	...	...	...	...	...	44-2 32-8	31-5 25-2	33-4 25-4	35-9 31-3	
Percentage	...	...	...	...	...	22-1 16-4	15-75 12-6	16-7 12-7	17-95 15-65	
Composition of the Milk.	...	...	...	...	...	4-08 5-28	4-28 4-93	5-10 6-50	3-67 6-60	
Actual weight of Fat, in lbs.	...	...	...	...	...	9-68 9-48	9-62 9-27	9-76 9-72	9-79 9-48	
Calculation of Points multiply by 20...	...	...	...	...	...	13-76 14-76	13-90 14-20	14-86 16-22	13-46 16-08	
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	-90 -866	-67 -62	-85 -825	-66 1-03	
Calculation of Points multiply by 4 ...	...	...	...	...	...	18-0 17-3	13-4 12-4	17-0 16-5	13-2 20-6	
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	2-14 1-55	1-52 1-17	1-64 1-23	1-76 1-48	
Calculation of Points multiply by 4 ...	...	...	...	...	...	8-6 6-2	6-1 4-7	6-6 4-9	7-04 5-92	
Points	...	...	...	...	...	12-0	5	12-0	9	
For time since Calving	...	...	...	...	...	38-5	28-4	29-4	33-6	
For weight of Milk (lbs.)	...	...	...	...	...	35-3	25-8	33-5	33-8	
For weight of Fat (lbs. × 20)	...	...	...	...	...	14-8	10-8	11-5	13-0	
For weight of Solids other than Fat (lbs × 4)	...	...	...	...	...	100-6	65-5	86-4	81-3	
Total	...	...	...	...	...	—	—	—	—
Deductions	...	...	...	...	...	100-6	65-5	86-4	81-3	
Points gained...	...	...	...	...	...	—	—	—	—
Remarks and Awards	...	...	...	...	...	1st Prize		Reserve and Highly Commended Cup.	Highly Commended.	

CLASS 21.—GUERNSEY COWS (BOEN AFTER 1ST AUGUST, 1920 AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ...	...	...	...	...	311	312	314	315
Name ...	...	...	...	...	Addington Begum 4th.	Addington Pulp.	Hadham Marigold 4th	Dahlia Ruby.
Born ...	...	...	...	...	Jan. 21, 1920.	Sept. 5, 1920.	Mar. 17, 1921.	Nov. 24, 1920.
Live weight, in lbs.	...	...	...	...	959	1,018	964	746
Last Calved ...	...	...	...	...	Sept. 18.	Aug. 18.	June 4.	Sept. 23.
Days since Calving	...	...	...	...	32	63	138	27
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	18-6 17-7	13-7 12-0	17-9 14-3	23-6 19-9
Total	...	...	...	...	21-0 16-2	14-8 12-2	18-2 13-7	25-6 17-6
Average	...	...	...	...	39-6 33-9	28-5 24-2	36-1 28-0	40-2 37-5
Percentage { Fat ...	...	...	...	...	19-8 16-95	14-25 12-1	18-05 14-0	24-6 18-75
Composition of { Solids other than Fat	...	...	...	...	3-40 3-25	4-31 5-32	5-25 5-74	4-14 4-45
the Milk. { Total Solids	...	...	...	...	9-66 8-99	9-45 9-40	9-75 9-62	9-34 9-45
Actual weight of Fat, in lbs.	...	...	...	...	13-06 12-24	13-76 14-72	15-00 15-36	13-48 13-90
Calculation of Points multiply by 20...	...	...	...	...	0-67 -552	0-61 -643	0-95 -802	1-02 -834
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	13-4 11-0	12-2 12-9	19-0 16-0	20-4 16-7
Calculation of Points multiply by 4 ...	...	...	...	...	1-91 1-52	1-35 1-13	1-76 1-35	2-30 1-77
Points { For time since Calving	...	...	...	...	7-6 6-1	5-4 4-5	7-0 5-4	9-2 7-1
For weight of Fat (lbs. × 20)	...	...	...	...	—	2-3	9-8	—
For weight of Solids other than Fat	...	...	...	...	36-8	26-4	32-1	43-4
(lbs. × 4) ...	...	...	...	...	24-4	25-1	35-0	37-1
Total ...	...	...	...	...	13-7	9-9	12-4	16-3
Deductions	...	...	...	...	74-9	63-7	89-3	96-8
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	74-9	63-7	89-3	96-8
	...	...	...	...	Highly Commended		3rd Prize.	2nd Prize.

CLASS 23.—GUERNSEY HEIFERS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN ON OR AFTER 1ST AUGUST, 1921).

Number ... Name ...	...	...	...	...	316 Milton Rosey 5th.	317 Dene Merton Preel	318 Levonias Beauty of Grand Fort 4th.	319 Varetha Valentine.
Born ...	...	...	...	...	Sept. 19, 1921. 899	Aug. 5, 1921. 893	Mar. 12, 1922. 897	May 16, 1922. 880
Live weight, in lbs. ...	...	...	...	...	Mar. 8. 226	Oct. 3. 17	July 1. 111	Aug. 16. 65
Last Calved ...	...	...	...	...
Days since Calving ...	...	...	...	...
Weight of Milk, 1st day ...	...	...	...	...	Morn Even 18-2 14-0	Morn Even 21-7 17-9	Morn Even 18-0 16-0	Morn Even 14-1 12-4
Weight of Milk, 2nd day ...	...	...	...	...	18-5 11-0	20-5 18-4	20-5 14-7	14-2 11-8
Total ...	...	...	...	...	36-7 25-0	42-2 36-3	38-5 30-7	28-3 24-2
Average ...	...	...	...	...	18-35 12-5	21-1 18-15	19-25 15-35	14-15 12-1
Percentage { Fat ...	...	...	...	...	5-24 5-65	4-20 5-52	3-98 5-21	4-49 5-64
Composition of { Solids other than Fat	...	...	...	...	9-74 9-97	9-96 9-80	9-68 9-51	9-67 9-46
the Milk. { Total Solids	...	...	...	...	14-98 15-62	14-16 15-32	13-66 14-72	14-16 15-10
Actual weight of Fat, in lbs. ...	...	...	...	...	0-96 0-705	0-885 1-0	0-77 0-8	0-63 0-682
Calculation of Points multiply by 20 ...	...	...	...	...	19-2 14-1	17-7 20-0	15-4 16-0	12-6 13-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-78 1-24	2-10 1-78	1-86 1-46	1-36 1-14
Calculation of Points multiply by 4 ...	...	...	...	...	7-1 5-0	8-4 7-1	7-4 5-8	5-4 4-6
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	12-0	—	7-1	2-5
	...	...	...	...	30-9	39-3	34-6	26-3
	...	...	...	...	33-3	37-7	31-4	26-2
	...	...	...	...	12-1	15-5	13-2	10-0
	...	...	...	...	88-3	92-5	86-3	65-0
Total ...	...	...	...	...	—	—	—	—
Deductions ...	...	...	...	...	88-3	92-5	86-3	65-0
Points gained ...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	2nd Prize.	1st Prize.	3rd Prize.	Highly Commended.

CLASS 22—GUERNSEY HEIFERS (BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	320 Calehill Jesamina.	322 Jenny's Violet 2nd.	323 Ranglebourne Rosie.	324 Minnie of Carteret 2nd.
Born ...	...	...	...	...	Mar. 28, 1922.	Jan. 17, 1922.	Oct. 4, 1921.	Nov. 13, 1921.
Live weight, in lbs. ...	...	...	...	...	774	756	809	950
Last Calved ...	...	...	...	...	Oct. 1.	Sept. 9.	July 5.	Aug. 21.
Days since Calving ...	...	...	...	...	19	41	107	60
Weight of Milk, 1st day ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day ...	...	...	...	...	10.4 6.8	16.9 14.6	15.6 13.7	18.2 16.5
Total ...	...	...	...	...	8.1 7.9	17.8 11.8	15.7 12.2	17.8 16.2
Average ...	...	...	...	...	18.5 14.7	34.7 26.4	31.3 25.9	36.0 32.7
Percentage ...	...	...	...	...	9.25 7.35	17.35 13.2	15.65 12.95	18.0 16.35
Composition of ...	...	...	...	...	8.19 7.17	3.35 4.56	4.16 5.16	4.19 5.02
the Milk. ...	...	...	...	...	9.35 9.59	9.49 9.10	9.90 9.48	9.65 9.44
Actual weight of Fat, in lbs. ...	...	...	...	...	17.54 16.76	12.84 13.66	13.76 14.64	13.84 15.06
Calculation of Points multiply by 20... Actual weight of Solids other than Fat, in lbs.	...	...	...	...	0.76 0.527	0.58 0.603	0.65 0.668	0.75 0.92
Calculation of Points multiply by 4 ...	...	...	...	...	15.2 10.5	11.6 12.1	13.0 13.4	15.0 18.4
Points ...	...	...	...	...	0.865 0.703	1.64 1.20	1.51 1.23	1.74 1.54
For time since Calving ...	...	...	...	...	3.5 2.8	6.6 4.8	6.0 4.9	7.0 6.2
For weight of Milk (lbs.) ...	...	...	...	...	—	0.1	6.7	2.0
For weight of Fat (lbs. × 20) ...	...	...	...	...	16.6	30.6	28.6	34.4
For weight of Solids other than Fat ...	...	...	...	...	25.7	23.7	26.4	33.4
(lbs. × 4) ...	...	...	...	...	6.3	11.4	10.9	13.2
Total ...	...	...	...	...	48.6	65.8	72.6	83.0
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	48.6	65.8	72.6	83.0
Remarks and Awards ...	...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 23.—JERSEY COWS (ENGLISH OR ISLAND BRED. ENTERED IN OR ELIGIBLE FOR THE HERD BOOK.
BORN ON OR PREVIOUS TO 1ST AUGUST, 1919).

Number ...	328	333	335	336
Name ...	Rochette Rose.	Last of the Marigolds.	Calceola's Finch.	Gaithington Petmoe 2nd.
Born ...	July 17, 1918. 778	Feb. 2, 1917. 911	Sept. 6, 1915. 840	Mar. 3, 1914. 850
Live weight, in lbs. ...	June 20. 122	May 17. 156	June 11. 131	Aug. 5. 76
Last Calved ...				
Days since Calving ...				
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	17-5 14-1	20-3 16-9	18-0 14-9	19-5 14-1
Total	17-2 13-2	18-3 16-4	19-2 14-5	16-6 13-0
Average	34-7 27-3	38-6 33-3	37-2 29-4	36-1 27-1
	17-35 13-65	19-3 16-65	18-6 14-7	18-05 13-55
Percentage	4-66 5-76	5-09 7-25	4-42 5-80	6-49 5-76
Composition of	9-20 9-44	9-49 9-49	9-12 9-22	9-29 9-04
the Milk. {	13-86 15-20	14-58 16-74	13-54 15-02	15-78 14-80
Actual weight of Fat, in lbs. ...	0-81 0-785	0-98 1-2	0-82 0-852	1-17 0-78
Calculation of Points multiply by 20...	16-2 15-7	19-6 24-0	16-4 17-0	23-4 15-6
Actual weight of Solids other than Fat, in lbs.	1-59 1-29	1-815 1-58	1-70 1-36	1-68 1-23
Calculation of Points multiply by 4 ...	6-4 5-2	7-3 6-3	6-8 5-4	6-7 4-9
Points {	8-2	11-6	9-1	3-6
For time since Calving				
For weight of Milk (lbs.) ...	31-0	36-0	33-3	31-6
For weight of Fat (lbs. × 20)	31-9	43-6	33-4	39-0
For weight of Solids other than Fat				
(lbs. × 4) ...	11-6	13-6	12-2	11-6
Total ...	82-7	104-8	88-0	85-8
Deductions ...				
Points gained...	82-7	104-8	88-0	85-8
Remarks and Awards ...		Reserve and Highly Commended.		

CLASS 23.—JERSEY COWS (ENGLISH OR ISLAND BRED. BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ... Name ...	...	...	...	...	337 Oxlip.	339 Vile Grogout Bowling Shd.	342 Frostie 4th.	343 Fairy Winks.
Born ...	...	...	...	...	July 23, 1919. 892	May 28, 1919. 1,257	Aug. 26, 1918. 888	Dec. 4, 1917. 912
Live weight, in lbs. ...	...	...	...	...	April 30. 173	July 27. 85	Feb. 28. 235	Feb. 15. 248
Last Calved ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Days since Calving ...	...	...	...	...	22-5 20-1	23-5 19-7	20-1 15-9	13-5 11-7
Weight of Milk, 1st day ...	...	...	...	...	23-0 18-5	22-5 11-7	19-1 13-8	13-9 11-1
Weight of Milk, 2nd day ...	...	...	...	...	45-5 38-6	46-0 31-4	39-2 29-7	27-4 22-8
Total ...	...	...	...	...	22-75 19-3	23-0 15-7	19-6 14-85	13-7 11-4
Average ...	...	...	...	...	5-08 5-81	4-57 6-17	5-03 6-34	5-50 6-80
Percentage Composition of the Milk.	...	...	...	...	9-78 9-47	9-15 9-27	9-25 9-28	9-32 9-14
Actual weight of Fat, in lbs. ...	...	...	...	...	14-86 15-28	13-72 15-44	14-28 15-62	14-82 15-94
Calculation of Points multiply by 20 ...	...	...	...	...	1-16 1-12	1-06 0-97	0-99 0-942	0-755 0-775
Actual weight of Solids other than Fat, in lbs. ...	...	...	...	...	23-2 22-4	21-2 19-4	19-8 18-8	15-1 15-5
Calculation of Points multiply by 4 ...	...	...	...	...	8-9 7-3	2-11 1-45	1-81 1-38	1-28 1-04
Points	...	...	...	...	12-0 42-1	4-5 38-7	12-0 34-5	12-0 25-1
For time since Calving ...	...	...	...	...	45-6	40-6	38-6	30-6
For weight of Milk (lbs.) ...	...	...	...	...	16-2	14-2	12-7	9-3
For weight of Fat (lbs. × 20) ...	...	...	...	...	115-9	98-0	97-8	77-0
For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	—	—	—	—
Total ...	...	...	...	...	115-9	98-0	97-8	77-0
Deductions ...	...	...	...	...	—	—	—	—
Points gained ...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	2nd Prize.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 23—JERSEY COWS (ENGLISH OR ISLAND BRED. BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ... Name	344 Blanco's Mite 3rd. May 16, 1916. 868 April 11. 192	345 Aero Viola. Aug. 22, 1917. 928 Aug. 4. 77	346 My Pet's Katie. May 2, 1919. 856 Sept. 2. 48	347 Buttercup Lily. June 11, 1918. 884 Aug. 24. 57
Born ...	...	...	...	...	Morn Even	Morn Even	Morn Even
Live weight, in lbs.	...	...	...	...	18-3 15-8	13-0 11-1	15-0 13-7
Last Calved ...	...	...	...	...	17-4 12-1	12-3 11-4	14-5 11-9
Days since Calving ...	...	...	...	...	35-7 27-9	25-3 22-5	29-5 25-6
Weight of Milk, 1st day	...	...	...	...	17-85 13-95	12-65 11-25	14-75 12-8
Weight of Milk, 2nd day	...	...	...	...	5-32 6-49	5-98 8-58	3-22 4-14
Total	...	...	...	...	9-40 9-17	9-74 9-20	9-06 8-84
Average	...	...	...	...	14-72 15-66	15-72 17-78	12-28 12-98
Percentage { Fat ...	...	...	...	...	0-95 0-904	0-76 0-964	0-475 0-530
Composition of { Solids other than Fat	...	...	...	...	19-0 18-1	15-2 19-3	9-5 10-6
the Milk. { Total Solids	...	...	...	...	1-68 1-28	1-24 1-03	1-34 1-13
Actual weight of Fat, in lbs. ...	...	...	...	...	6-7 5-1	5-0 4-1	5-04 4-5
Calculation of Points multiply by 20...	...	...	...	...	12-0	3-7	1-7
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	31-8	23-9	27-6
Calculation of Points multiply by 4 ...	...	...	...	...	37-1	34-5	20-1
Points { For time since Calving	...	...	...	...	11-8	9-1	9-9
For weight of Milk (lbs.)	...	...	...	...	92-7	71-2	59-3
For weight of Fat (lbs. × 20)	...	...	...	...	—	—	—
For weight of Solids other than Fat	...	...	...	...	92-7	71-2	59-3
(lbs. × 4) ...	...	...	...	...	—	—	—
Total ...	...	...	...	...	—	—	—
Deductions ...	...	...	...	...	—	—	—
Points gained...	...	...	...	...	—	—	—
Remarks and Awards ...	...	...	...	...	Highly Commended.	—	—

CLASS 23.—JERSEY COWS (ENGLISH OR ISLAND BRED. BORN ON OR PREVIOUS TO 1ST AUGUST, 1919)—Continued.

Number ... Name ...	...	...	...	...	348 Hamletta's Queen.	349 Lily of the Valley.	350 Marriette's Violet.	351 Negundo.
Born ...	...	...	...	...	Mar. 10, 1918. 766	Oct. 26, 1917. 989	July 23, 1917. 882	Jan. 13, 1917. 810
Live weight, in lbs.	...	...	...	...	April 19. 184	May 22. 151	June 26. 116	June 27. 115
Last Calved ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Days since Calving	...	...	...	...	21.1 15.3	19.6 16.2	25.2 21.4	24.5 20.6
Weight of Milk, 1st day	...	...	...	...	19.4 14.5	18.4 14.9	26.1 19.4	22.9 16.7
Weight of Milk, 2nd day	...	...	...	...	40.5 29.8	38.0 31.1	51.3 40.8	47.4 37.3
Total ...	...	...	...	...	20.25 14.9	19.0 15.55	25.65 20.4	23.7 18.65
Average ...	...	...	...	...	4.71 4.48	5.10 5.01	5.25 6.31	4.43 5.21
Percentage { Fat ...	...	...	...	...	9.23 9.74	9.14 9.45	9.99 9.73	9.13 9.24
Composition of { Solids other than Fat	...	...	...	...	13.94 14.22	14.54 14.46	15.24 16.04	13.56 14.48
the Milk. { Total Solids	...	...	...	...	0.955 0.67	0.97 0.78	1.35 1.29	1.06 0.976
Actual weight of Fat, in lbs. ...	...	...	...	...	19.1 13.4	19.4 15.6	27.0 25.8	21.2 19.5
Calculation of Points multiply by 20...	...	...	...	...	1.87 1.45	1.80 1.47	2.56 1.99	2.165 1.72
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	7.5 5.8	7.2 5.9	10.2 8.0	8.7 6.9
Calculation of Points multiply by 4 ...	...	...	...	...	12.0	11.1	7.6	7.5
{ For time since Calving	...	...	...	...	35.2	34.6	46.1	42.4
{ For weight of Milk (lbs.)	...	...	...	...	32.5	35.0	52.8	40.7
{ For weight of Fat (lbs. × 20)	...	...	...	...	13.3	13.1	18.2	15.6
{ For weight of Solids other than Fat	...	...	...	...	93.0	93.8	124.7	106.2
{ (lbs. × 4) ...	...	...	...	...	—	—	—	—
Total ...	...	...	...	...	93.0	93.8	124.7	106.2
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	Highly Commended.	Highly Commended.	1st Prize, National Milk Cup.	3rd Prize.

CLASS 24.—JERSEY COWS—(ENGLISH OR ISLAND BRED—ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921).

Number ...	...	...	...	...	352	353	354	356
Name ...	...	...	...	...	Golden Raspberry.	Danbury Gladly.	Urapolitaine.	Mastermans (golden Chionia.
Born ...	...	...	...	...	Dec. 20, 1920.	April 2, 1921.	April 24, 1921.	June 18, 1920.
Live weight, in lbs.	...	...	...	...	825	833	738	1,089
Last Calved ...	...	...	...	...	Feb. 9.	Aug. 24.	Aug. 18.	May 26.
Days since Calving	...	...	...	...	254	57	63	147
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	18-9 15-0	12-4 11-6	17-0 13-8	14-0 10-7
Total	...	...	...	...	19-2 14-9	14-1 12-1	16-9 13-7	13-1 11-4
Average	...	...	...	...	38-1 29-9	26-5 23-7	33-9 27-5	27-1 22-1
Percentage { Fat ...	...	...	...	...	19-05 14-95	13-25 11-85	16-95 13-75	13-55 11-05
Composition of { Solids other than Fat	...	...	...	...	6-94 7-59	4-85 5-30	6-67 6-14	7-89 8-52
the Milk. { Total Solids	...	...	...	...	9-72 9-71	9-49 9-22	9-75 9-54	10-51 11-12
Actual weight of Fat, in lbs. ...	...	...	...	...	16-66 17-30	14-34 14-52	16-42 15-68	18-40 19-64
Calculation of Points multiply by 20...	...	...	...	...	1-32 1-13	0-64 0-628	1-13 0-846	1-07 0-94
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	26-4 22-6	12-8 12-6	22-6 16-9	21-4 18-8
Calculation of Points multiply by 4 ...	...	...	...	...	1-85 1-45	1-26 1-09	1-65 1-30	1-42 1-23
Points { For time since Calving	...	...	...	...	7-4 5-8	5-0 4-4	6-6 5-2	5-7 4-9
{ For weight of Milk (lbs.)	...	...	...	...	12-0	1-7	2-3	10-7
{ For weight of Fat (lbs. × 20)	...	...	...	...	34-0	25-1	30-7	24-6
{ For weight of Solids other than Fat	...	...	...	...	49-0	25-4	39-5	40-2
(lbs. × 4)	...	...	...	...	13-2	9-4	11-8	10-6
Total	...	...	...	...	108-2	61-6	84-3	86-1
Deductions	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	108-2	61-6	84-3	86-1
Remarks and Awards ...	...	...	...	...	Reserve and Highly Commended.		Highly Commended.	Highly Commended.

CLASS 24.—JERSEY COWS—(ENGLISH OR ISLAND BRED—BORN AFTER 1ST AUGUST, 1913, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	358 Weybeard's Fanny.	359 Duchess of Carita 4th	360 Lady Memento.	361 Ickleford Three.
Born ...	...	...	...	...	Oct. 27, 1919. 795	Mar. 8, 1920. 1,010 July 9. 103	Jan. 4, 1920. 901 Aug. 16. 65	Dec. 24, 1920. 844 July 29. 83
Live weight, in lbs. ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Last Calved ...	...	...	...	...	19-8 14-5	16-2 13-4	12-1 10-6	14-8 14-1
Days since Calving ...	...	...	...	...	11-8 12-4	16-1 14-1	13-1 11-0	14-9 12-0
Weight of Milk, 1st day ...	...	...	...	...	31-6 26-9	32-3 27-5	25-2 21-6	20-7 26-1
Weight of Milk, 2nd day ...	...	...	...	...	15-8 13-45	16-15 13-75	12-6 10-8	14-85 13-05
Total ...	...	...	...	...	5-14 5-61	4-45 6-12	5-12 5-08	4-13 6-24
Average ...	...	...	...	...	9-52 9-23	8-33 8-42	9-64 9-44	9-21 9-38
Percentage { Fat ... Composition of { Solids other than Fat the Milk. { Total Solids	...	...	...	...	14-66 14-84	12-78 14-54	14-76 14-52	13-34 15-62
Actual weight of Fat, in lbs. ...	...	...	...	...	0-815 0-755	0-72 0-84	0-65 0-547	0-61 0-813
Calculation of Points multiply by 20... Actual weight of Solids other than Fat, in lbs. Calculation of Points multiply by 4 ..	...	...	...	...	16-3 15-1	14-4 16-8	13-0 10-9	12-2 16-3
Points { For time since Calving ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	1-50 1-24	1-35 1-16	1-22 1-02	1-37 1-22
Total ...	...	...	...	...	6-0 5-0	5-4 4-6	4-9 4-1	5-5 4-9
Deductions ...	...	...	...	...	3-1	6-3	2-5	4-3
Points gained... Remarks and Awards ...	...	...	...	...	29-3	29-9	23-4	27-9
	...	...	...	...	31-4	31-2	23-9	28-5
	...	...	...	...	11-0	10-0	9-0	10-4
	...	...	...	...	74-8	77-4	58-8	71-1
	...	...	...	...	—	20-0	—	—
	...	...	...	...	74-8	57-4	58-8	71-1

CLASS 24.—JERSEY COWS—(ENGLISH OR ISLAND BRED—BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ...	...	...	...	362	363	369	370
Name ...	...	...	...	Survville Blond's Fern.	Roberta's Star 2nd.	Moss Rosebud.	Pirouette.
Born ...	...	...	...	May 15, 1921.	Oct. 15, 1920.	July 23, 1921.	April 3, 1920.
Live weight, in lbs.	...	...	...	869	848	778	966
Last Calved ...	...	...	...	May 2,	May 4.	Oct. 1.	June 7.
Days since Calving	...	...	...	171	169	19	135
Weight of Milk, 1st day	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	12.3 10.2	15.6 12.3	20.6 17.2	18.6 16.2
Total	...	...	...	12.2 10.3	13.1 14.7	20.1 16.9	17.8 14.9
Average ...	...	...	...	24.5 20.5	28.7 27.0	40.7 34.1	36.4 31.1
Percentage	...	...	...	12.25 10.25	14.35 13.5	20.35 17.05	18.2 15.56
Composition of { Fat ...	...	...	...	5.29 6.90	5.77 6.53	4.09 6.66	6.15 6.74
the Milk. { Solids other than Fat	...	...	...	10.27 10.20	9.97 10.49	9.61 9.46	9.61 9.36
Total Solids	...	...	...	15.56 17.10	15.74 17.02	13.70 16.12	15.76 16.10
Actual weight of Fat, in lbs.	...	...	...	0.65 0.707	0.83 0.882	0.83 1.13	1.12 1.05
Calculation of Points multiply by 20...	...	...	...	13.0 14.1	16.6 17.6	16.6 22.6	22.4 21.0
Actual weight of Solids other than Fat, in lbs.	...	...	...	1.265 1.04	1.43 1.42	1.96 1.61	1.75 1.46
Calculation of Points multiply by 4 ...	...	...	...	5.1 4.2	5.7 5.7	7.8 6.4	7.0 5.8
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	12.0	12.0	37.4	9.5
	...	...	...	22.5	27.9	39.2	33.8
	...	...	...	27.1	34.2	—	43.4
	...	...	...	9.3	11.4	14.2	12.8
	...	...	...	70.9	85.5	90.8	99.5
Total ...	...	...	...	—	—	—	—
Deductions ...	...	...	...	70.9	85.5	90.8	99.5
Points gained...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 24.—JERSEY COWS—(ENGLISH OR ISLAND BRED—BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ...	...	...	...	...	371 Princess Marigold.	372 Wendy's Beauty.	373 Cairina.	374 Bayuda.
Name ...	...	...	...	...	...	...	...	...
Born ...	...	...	...	...	April 26, 1920, 881	May 21, 1920, 878	Nov. 7, 1919, 906	Aug. 4, 1919, 784
Live weight, in lbs.	...	...	...	...	May 21, 152	Aug. 28, 53	Sept. 11, 39	Aug. 20, 61
Last Calved ...	...	...	...	...	...	...	...	...
Days since Calving	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day	...	...	...	...	23-2 18-2	23-3 19-6	18-0 17-1	21-6 16-6
Weight of Milk, 2nd day	...	...	...	...	20-1 18-6	22-1 20-1	20-3 14-4	19-5 15-3
Total	...	...	...	...	43-3 36-8	45-4 39-7	38-3 31-5	41-1 31-9
Average ...	...	...	...	...	21-65 18-4	22-7 19-85	19-15 15-75	20-55 15-95
Percentage { Fat ...	...	...	...	...	5-16 6-86	5-15 7-35	4-93 5-76	4-71 5-52
Composition of { Solids other than Fat	...	...	...	...	9-64 9-36	9-47 9-41	8-79 8-56	9-25 9-44
the Milk. { Total Solids	...	...	...	...	14-80 16-22	14-62 16-76	13-72 14-32	13-96 14-96
Actual weight of Fat, in lbs.	...	...	...	...	1-12 1-26	1-17 1-46	0-95 0-905	0-97 0-88
Calculation of Solids multiply by 20...	...	...	...	...	22-4 25-2	23-4 29-2	19-0 18-1	19-4 17-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	2-08 1-72	2-15 1-87	1-68 1-35	1-91 1-51
Calculation of Points multiply by 4 ...	...	...	...	...	8-3 6-9	8-6 7-5	6-7 5-4	7-6 6-0
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	11-2	1-3	—	2-1
	...	...	...	...	40-1	42-6	34-9	36-5
	...	...	...	...	47-6	52-6	37-1	37-0
	...	...	...	...	15-2	16-1	12-1	13-6
Total ...	...	...	...	...	114-1	112-6	84-1	89-2
Deductions	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	114-1	112-6	84-1	89-2
Remarks and Awards ...	...	...	...	...	2nd Prize.	3rd Prize.	Highly Commended.	Highly Commended.

CLASS 24.—JERSEY COWS—(ENGLISH OR ISLAND BRED—BORN AFTER 1ST AUGUST, 1919, AND PREVIOUS TO 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	375 Fontaine's Lilac.	378 Dewberry.	379 Standon Dinah.
Born ...	...	...	...	...	Feb. 12, 1920.	April 7, 1920.	Nov. 20, 1919.
Live weight, in lbs.	...	...	...	...	848	882	979
Last Calved ...	...	...	...	...	July 9.	July 22.	May 15.
Days since Calving ...	...	...	...	...	103	90	158
Weight of Milk, 1st day	...	...	...	...	Morn	Morn	Morn
Weight of Milk, 2nd day	...	...	...	...	Even	Even	Even
Total ...	...	...	...	...	21.5	24.4	19.2
Average ...	...	...	...	...	17.6	22.0	14.9
Percentage { Fat ...	...	...	...	...	20.5	27.1	15.6
Composition of { Solids other than Fat	...	...	...	...	17.5	18.7	14.0
the Milk. { Total Solids	...	...	...	...	42.0	51.5	34.8
Actual weight of Fat, in lbs. ...	...	...	...	...	35.1	40.7	28.9
Calculation of Points multiply by 20...	...	...	...	...	21.0	25.75	17.4
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	17.55	20.35	14.45
Calculation of Points multiply by 4 ...	...	...	...	...	4.71	4.92	5.61
{ For time since Calving	...	...	...	...	9.69	9.60	6.90
{ For weight of Milk (lbs.)	...	...	...	...	10.21	9.46	9.87
{ For weight of Fat (lbs. × 20)	...	...	...	...	14.40	14.52	15.48
{ For weight of Solids other than Fat	...	...	...	...	17.44	14.98	16.62
{ (lbs. × 4) ...	...	...	...	...	0.99	1.27	1.00
Total ...	...	...	...	...	25.4	22.6	19.5
Deductions ...	...	...	...	...	19.8	25.4	20.0
Points gained...	...	...	...	...	2.03	1.92	1.72
...	...	...	...	...	8.1	9.9	6.9
...	...	...	...	...	7.2	7.7	5.6
...	...	...	...	...	6.3	5.0	11.8
...	...	...	...	...	38.6	46.1	31.9
...	...	...	...	...	45.2	48.0	39.5
...	...	...	...	...	15.3	17.6	12.5
...	...	...	...	...	105.4	116.7	95.7
...	—	—	—
...	...	...	...	...	105.4	116.7	95.7
Remarks and Awards ...	...	...	...	...	Highly Commended.	1st Prize.	Highly Commended.

CLASS 25.—JERSEY HEIFER—(ENGLISH OR ISLAND BRED. ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN ON OR AFTER 1ST AUGUST, 1921).

Number ...	...	...	...	380	384	385	386
Name ...	...	...	...	Hollyhock of Hollywood	Wotton Ozone,	Leighton Cowslip, 6th.	penshurst Sybil.
Born ...	...	...	...	April 3, 1922.	Aug. 12, 1922.	Nov. 11, 1921.	July 1, 1922.
Live weight, in lbs.	...	...	...	758	809	724	845
Last Calved ...	...	...	...	July 2.	Aug. 16.	July 27.	Aug. 8.
Days since Calving	...	...	...	110	65	85	73
Weight of Milk, 1st day	...	...	...	Morn	Morn	Morn	Morn
Weight of Milk, 2nd day	...	...	...	Even	Even	Even	Even
Total	...	...	...	15-8 14-5	17-1 14-7	11-9 13-9	9-7 8-6
Average	...	...	...	16-3 13-9	15-6 13-7	12-4 11-5	10-0 8-0
Percentage { Fat ...	...	...	...	32-1 28-4	32-7 28-4	24-3 25-4	19-7 16-6
Composition of { Solids other than Fat	...	...	...	16-05 14-2	16-35 14-2	12-15 12-7	9-85 8-3
the Milk. { Total Solids	...	...	...	4-39 7-13	4-50 5-37	3-59 7-84	6-69 7-40
Actual weight of Fat, in lbs. ...	...	...	...	9-77 9-49	9-86 9-49	9-77 9-46	10-27 10-00
Calculation of Points multiply by 20...	...	...	...	14-16 16-62	14-36 14-86	13-36 17-30	16-96 17-40
Actual weight of Solids other than Fat, in lbs.	...	...	...	0-705 1-01	0-735 0-76	0-44 1-00	0-66 0-613
Calculation of Points multiply by 4 ...	...	...	...	14-1 20-2	14-7 15-2	8-8 20-0	13-2 12-3
Points { For time since Calving	...	...	...	1-57 1-34	1-61 1-35	1-19 1-20	1-01 8-3
{ For weight of Milk (lbs.)	...	...	...	6-3 5-4	6-4 5-4	4-8 4-8	4-0 3-3
{ For weight of Fat (lbs. × 20)	...	...	...	7-0	2-5	4-5	3-3
{ For weight of Solids other than Fat	...	...	...	30-3	30-6	24-9	18-2
(lbs. × 4)	...	...	...	34-3	29-9	28-8	25-5
Total	...	...	...	11-7	11-8	9-6	7-3
Deductions	...	...	...	83-3	74-8	67-8	54-3
Points gained...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	8-33	74-8	67-8	54-3
	...	...	...	3rd Prize.	Highly Commended.	Highly Commended.	

CLASS 25—JERSEY HEIFER (ENGLISH OR ISLAND BRED. BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	387 Essence Pride.	388 Blinkbonny (imp).	391 Philandra.	392 King Cup.
Born ...	...	...	...	...	Jan. 8, 1922. 797	April 15, 1922. 680	Nov. 20, 1921. 841	April 25, 1922. 784
Live weight, in lbs.	...	...	...	...	May 31. 142	Aug. 28. 53	May 13. 160	May 17. 156
Last Calved ...	...	...	...	...
Days since Calving	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn Even 17-1 14-6	Morn Even 13-3 13-2	Morn Even 15-7 11-5	Morn Even 15-7 12-2
Weight of Milk, 2nd day	...	...	...	...	17-8 14-9	16-0 13-1	13-3 11-5	14-2 13-9
Total	...	...	...	...	34-9 29-5	29-3 26-3	28-4 23-0	29-9 26-1
Average ...	...	...	...	...	17-45 14-75	14-65 13-15	14-2 11-5	14-95 13-05
Percentage { Fat ...	...	...	...	...	5-09 5-59	4-79 6-01	6-17 6-19	5-78 6-68
Composition of { Solids other than Fat	...	...	...	...	10-03 9-91	9-89 9-49	9-45 9-71	9-60 9-28
the Milk. { Total Solids	...	...	...	...	15-12 15-50	14-68 15-50	15-62 15-90	15-38 15-96
Actual weight of Fat, in lbs.	...	...	...	...	0-89 0-825	0-70 0-79	0-87 0-71	0-86 0-87
Calculation of Points multiply by 20...	...	...	...	...	17-8 16-5	14-0 15-8	17-4 14-2	17-2 17-4
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-76 1-46	1-45 1-25	1-34 1-12	1-43 1-21
Calculation of Points multiply by 4 ...	...	...	...	...	7-0 5-8	5-8 5-0	5-4 4-5	5-7 4-8
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs × 4)	...	...	...	...	10-2	1-3	12-0	11-6
	...	...	...	...	32-2	27-8	25-7	28-0
	...	...	...	...	34-3	29-8	31-6	34-6
	...	...	...	...	12-8	10-8	9-9	10-5
Total ...	...	...	...	...	89-5	69-7	79-2	84-7
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	89-5	69-7	79-2	84-7
Remarks and Awards ...	...	...	...	...	1st Prize.	Highly Commended.	Reserve and Highly Commended.	2nd Prize.

CLASS 25.—JERSEY HEIFER (ENGLISH OR ISLAND BRED. BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ... Name ...	...	...	...	...	393 Kahua.	397 Le Grande Rue Mistress, 2nd.	398 Clonderry.	399 Crystal Chablis 2nd.
Born ...	...	...	...	...	May 8, 1922. 749	Aug. 4, 1921. 808	Sept. 7, 1922. 606	June 24, 1922. 746
Live weight, in lbs. Last Calved ...	...	...	...	...	Sept. 22. 28	Sept. 13. 37	Sept. 30. 20	Sept. 21. 29
Days since Calving	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 1st day	...	...	...	...	14-8 13-6	16-3 14-0	13-7 14-9	8-9 8-2
Weight of Milk, 2nd day	...	...	...	...	14-7 14-2	15-9 13-1	13-8 12-8	8-9 8-0
Total ...	...	...	...	...	29-5 27-8	32-2 27-1	27-5 27-7	17-8 16-2
Average ...	...	...	...	...	14-75 13-9	16-1 13-55	13-75 13-85	8-9 8-1
Percentage { Fat ...	...	...	...	...	5-68 6-25	4-90 6-41	3-37 7-10	5-30 6-58
Composition of { Solids other than Fat	...	...	...	...	9-86 9-63	9-04 8-67	9-29 8-48	9-42 8-96
the Milk. { Total Solids	...	...	...	...	15-54 15-88	13-94 15-08	12-66 15-58	14-72 15-54
Actual weight of Fat, in lbs. ...	...	...	...	...	0-84 0-87	0-79 0-87	0-46 0-983	0-47 0-532
Calculation of Points multiply by 20...	...	...	...	...	16-8 17-4	15-8 17-4	9-2 19-7	9-4 10-6
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-46 1-34	1-46 1-17	1-28 1-17	0-84 0-726
Calculation of Points multiply by 4 ...	...	...	...	...	5-8 5-4	5-8 4-7	5-1 4-7	3-4 2-9
Points { For time since Calving For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	28-7	29-7	27-6	17-0
	...	...	...	...	34-2	33-2	28-9	20-0
	...	...	...	...	11-2	10-5	9-8	6-3
	...	...	...	...	74-1	73-4	66-3	43-3
Total ...	...	...	...	...	—	—	10-0	—
Deductions ...	...	...	...	...	74-1	73-4	56-3	43-3
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	Highly Commended.	Highly Commended.	—	—

Class 25.—JERSEY HEIFER (ENGLISH OR ISLAND BRED. BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number Name	...	...	...	...	...	400 Sixty-five.	401 Edridge.	402 Cat's Rakigh Spectre.
Born	...	...	...	...	...	July 14, 1922.	Aug. 17, 1922.	Mar. 1, 1922.
Live weight, in lbs.	...	...	...	...	...	758	742	774
Last Calved	...	...	...	...	...	Sept. 14.	Sept. 5.	May 21.
Days since Calving	...	...	...	...	...	36	45	152
Weight of Milk, 1st day	...	...	...	...	...	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	...	14.3 11.7	16.1 12.9	14.2 11.5
Total	...	...	...	...	...	15.6 13.1	16.8 12.7	15.1 11.5
Average	...	...	...	...	...	29.9 24.8	32.9 25.6	29.3 23.0
Percentage	...	...	...	...	...	14.95 12.4	16.45 12.8	14.65 11.5
Composition of	...	...	...	...	...	3.63 3.99	3.77 4.33	5.24 6.00
the Milk.	...	...	...	...	...	9.29 8.95	8.99 8.97	9.56 8.98
Actual weight of Fat, in lbs.	...	...	...	...	...	12.92 12.94	12.76 13.30	14.80 14.98
Calculation of Points multiply by 20...	...	...	...	...	...	0.54 0.495	0.62 0.555	0.77 0.69
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	10.8 9.9	12.4 11.1	15.4 13.8
Calculation of Points multiply by 4 ...	...	...	...	...	...	1.39 1.11	1.48 1.15	1.40 1.03
Points	...	...	...	...	...	5.6 4.4	5.9 4.6	5.6 4.1
For time since Calving	...	...	...	...	...	—	0.5	11.2
For weight of Milk (lbs.)	...	...	...	...	...	27.4	29.3	26.2
For weight of Fat (lbs. × 20)	...	...	...	...	...	20.7	23.5	29.2
For weight of Solids other than Fat	...	...	...	...	...	10.0	10.5	9.7
(lbs. × 4) ...	...	...	...	...	...	58.1	63.8	76.3
Total ...	...	...	...	...	...	—	—	—
Deductions ...	...	...	...	...	...	58.1	63.8	76.3
Points gained...	...	...	...	...	...	—	—	—
Remarks and Awards	...	...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.

CLASS 26.—KERRY COWS (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK).

Number ... Name ...	...	...	...	...	406 Hathinley Happy Vasia.	407 Pythouse Aggie.	408 Rosebud of Carton.	410 Buckhurst Bubbles.
Born ...	...	...	...	...	1920.	1915.	Mar. 10, 1919.	July 15, 1915.
Live weight, in lbs.	...	...	...	...	824	978	1,036	868
Last Calved ...	...	...	...	...	Sept. 11.	July 19.	Aug. 29.	Sept. 27.
Days since Calving	...	...	...	...	39	93	52	23
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	22-8 16-8	23-0 19-3	22-9 24-4	21-4 17-0
Total	...	...	...	...	22-4 18-9	22-3 20-3	25-4 20-9	22-5 17-6
Average	...	...	...	...	45-2 35-7	45-3 39-6	48-3 45-3	43-9 34-6
Percentage	...	...	...	...	22-6 17-85	22-65 19-8	24-15 22-65	21-95 17-3
Composition of	...	...	...	...	5-34 5-86	3-19 6-13	3-21 5-15	4-29 4-92
the Milk.	...	...	...	...	8-80 8-72	9-45 8-79	9-21 8-87	8-87 8-58
Actual weight of Fat, in lbs.	...	...	...	...	14-14 14-58	12-64 14-92	12-42 14-02	13-16 13-50
Actual weight of Points multiply by 20...	...	...	...	...	1-21 1-04	0-72 1-22	0-77 1-17	0-94 0-85
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	24-2 20-8	14-4 24-3	15-4 23-4	18-8 17-0
Calculation of Points multiply by 4 ...	...	...	...	...	1-99 1-55	2-14 1-74	2-23 2-0	1-94 1-48
For time since Calving	...	...	...	...	8-0 6-2	8-6 7-0	8-9 8-0	7-8 5-9
For weight of Milk (lbs.)	...	...	...	...	40-5	5-3	1-2	39-3
For weight of Fat (lbs. × 20)	...	...	...	...	45-0	42-5	46-8	35-5
For weight of Solids other than Fat	...	...	...	...	14-2	15-6	16-9	13-7
(lbs. × 4) ...	...	...	...	...	99-7	102-2	103-7	88-8
Total	...	...	...	...	99-7	102-2	103-7	88-8
Deductions	...	...	...	...	99-7	102-2	103-7	88-8
Points gained...	...	...	...	...	99-7	102-2	103-7	88-8
Remarks and Awards ...	...	...	...	...	3rd Prize.	2nd Prize. Reserve for Kerry Society's Cup.	1st Prize Kerry Society's Cup.	Reserve.

Class 26.—KERRY COWS—Continued.

Number ... Name ...	...	...	...	...	411 Bussey Bee of Warren.	412 Buckhurst Surprise.	413 Minley Winnie.	414 Minley Trixie.
Born ...	...	...	...	...	Oct. 20, 1918. 835	July, 1915. 1,046	Oct. 22, 1917. 1,078	Jan. 19, 1919. 1,173
Live weight, in lbs.	...	...	...	...	May. 16. 157	June 18. 124	Aug. 22. 59	Aug. 23. 58
Last Calved ...	...	...	...	...
Days since Calving	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	12.8 10.2	16.0 12.3	17.5 15.4	11.4 9.8
Total	...	...	...	...	14.0 10.8	16.3 13.5	19.7 15.1	10.6 10.9
Average	...	...	...	...	26.8 21.0	32.3 25.8	37.2 30.5	22.0 20.7
	...	...	...	...	13.4 10.5	16.15 12.9	18.6 15.25	11.0 10.35
Percentage	...	...	...	...	5.39 5.96	5.35 6.13	3.19 4.09	2.59 3.68
Composition of	...	...	...	...	9.09 9.04	9.61 9.59	8.93 8.63	8.21 7.96
the Milk. {	...	...	...	...	14.48 15.00	14.96 15.72	12.12 12.72	10.80 11.64
Total Solids	...	...	...	...	0.72 0.626	0.865 0.791	0.59 0.622	0.28 0.381
Actual weight of Fat, in lbs.	...	...	...	...	14.4 12.5	17.3 15.8	11.8 12.4	5.6 7.6
Calculation of Points multiply by 20...	...	...	...	...	1.22 0.95	1.56 1.24	1.67 1.32	0.90 0.824
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	4.9 3.8	6.2 5.0	6.7 5.3	3.6 3.3
Calculation of Points multiply by 4 ...	...	...	...	...	11.7	8.4	1.9	1.8
{ For time since Calving	...	...	...	...	23.9	29.1	33.9	21.4
{ For weight of Milk (lbs.)	...	...	...	...	26.9	33.1	24.2	13.2
{ For weight of Fat (lbs. × 20)	...	...	...	...	8.7	11.2	12.0	6.9
{ For weight of Solids other than Fat	...	...	...	...	71.2	81.8	72.0	43.3
{ (lbs. × 4) ...	...	...	...	...	—	—	—	30.0
Total ...	...	...	...	...	71.2	81.8	72.0	13.3
Deductions ...	...	...	...	...
Points gained...	...	...	...	...
Remarks and Awards ...	...	...	...	...		Highly Commended.		

Class 26.—KERRY COWS—Continued.

Number ...	...	...	...	...	416
Name ...	...	...	...	...	Castledough Hannah.
Born ...	...	...	...	...	April 18, 1917.
Live weight, in lbs.	...	...	...	...	884
Last Calved ...	...	...	...	...	Sept. 6.
Days since Calving	...	...	...	...	44
Weight of Milk, 1st day	...	...	...	...	Morn Even
Weight of Milk, 2nd day	...	...	...	...	21-3 17-5
Total ...	...	...	...	...	21-3 16-8
Average ...	...	...	...	...	42-6 34-3
Percentage { Fat ...	...	...	...	...	21-3 17-15
Composition of { Solids other than Fat	...	...	...	...	3-37 4-63
the Milk. { Total Solids	...	...	...	...	9-09 9-21
Actual weight of Fat, in lbs.	...	...	...	...	12-46 13-84
Calculation of Points multiply by 20...	...	...	...	...	0-72 0-795
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	14-4 15-9
Calculation of Points multiply by 4 ...	...	...	...	...	1-94 1-58
Points { For time since Calving	...	...	...	...	7-8 6-3
{ For weight of Milk (lbs.)	...	...	...	...	0-4
{ For weight of Fat (lbs. \times 20)	...	...	...	...	38-5
{ For weight of Solids other than Fat	...	...	...	...	30-3
(lbs. \times 4) ...	...	...	...	...	14-1
Total ...	...	...	...	...	83-3
Deductions ...	...	...	...	...	—
Points gained...	...	...	...	...	83-3
Remarks and Awards ...	...	...	...	...	Highly Commended.

CLASS 27.—KERRY HEIFER (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN ON OR AFTER 1ST AUGUST, 1921).

	417	419	421	423
Number ...	Rebecca of Warren.	Wonderful of Warren.	Hattingley Ariadne	Drumgannagh Joyce.
Name ...	...	...	...	...
Born ...	Jan. 2, 1922.	Oct. 14, 1921.	May 23, 1922.	Dec. 16, 1921.
Live weight, in lbs.	804	742	840	670
Last Calved ...	Aug. 31.	Aug. 13.	Sept. 9.	Aug. 29.
Days since Calving	50	68	41	52
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	12-8 10-3	8-8 8-1	10-2 9-4	10-7 5-7
Total ...	12-8 10-9	9-3 8-0	10-5 8-6	7-3 6-8
Average ...	25-6 21-2	18-1 16-1	20-7 18-0	18-0 12-5
Percentage	12-8 10-6	9-05 8-05	10-35 9-0	9-0 6-25
Composition of the Milk.	4-97 5-37	5-50 6-84	3-12 4-48	6-00 6-71
Actual weight of Fat, in lbs.	9-41 9-41	9-32 8-96	8-84 8-46	8-84 8-33
Actual weight of Solids other than Fat, in lbs.	14-38 14-78	14-82 15-80	11-96 12-94	14-84 15-04
Calculation of Points multiply by 20...	0-64 0-569	0-50 0-550	0-32 0-403	0-54 0-42
Actual weight of Solids other than Fat, in lbs.	12-8 11-4	10-0 11-0	6-4 8-1	10-8 8-4
Calculation of Points multiply by 4 ...	1-21 0-995	0-845 0-72	0-91 0-76	0-79 0-522
Points	4-8 4-0	3-4 2-9	3-6 3-0	3-2 2-1
For time since Calving	1-0	2-8	0-1	1-2
For weight of Milk (lbs.)	23-4	17-1	19-4	15-3
For weight of Fat (lbs. × 20)	24-2	21-0	14-5	19-2
For weight of Solids other than Fat (lbs. × 4) ...	8-8	6-3	6-6	5-3
Total ...	57-4	47-2	40-6	41-0
Deductions	—	—	10-0	10-0
Points gained...	57-4	47-2	30-6	31-0
Remarks and Awards ...	1st Prize.			

CLASS 27.—KERRY HEIFER (BORN ON OR AFTER 1ST AUGUST, 1921)—Continued.

Number ...	...	...	...	...	...	424
Name ...	...	...	...	...	...	Drumgannagh, Priamrose.
Born ...	...	...	...	...	...	Mar. 2, 1922.
Live weight, in lbs.	...	...	...	...	...	586
Last Calved ...	...	...	...	...	...	Aug. 20,
Days since Calving	...	...	...	...	...	61
Weight of Milk, 1st day	...	...	...	...	Morn	Even
Weight of Milk, 2nd day	...	...	...	...	5.3	9.3
Total	...	...	...	...	7.6	7.0
Average ...	...	...	...	...	12.9	16.3
Percentage { Fat ...	...	...	...	...	6.45	8.15
Composition of { Solids other than Fat	...	...	...	...	2.69	6.97
the Milk. { Total Solids	...	...	...	...	9.23	8.91
Actual weight of Fat, in lbs. ...	...	...	...	...	11.92	15.88
Calculation of Points multiply by 20...	...	...	...	...	0.17	0.567
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	3.4	11.3
Calculation of Points multiply by 4 ...	...	...	...	...	0.595	0.729
Points { For time since Calving	...	...	...	...	2.4	2.9
{ For weight of Milk (lbs.)	...	...	...	...	2.1	
{ For weight of Fat (lbs. × 20)	...	...	...	...	14.6	
{ For weight of Solids other than Fat	...	...	...	...	14.7	
(lbs. × 4) ...	...	...	...	...	5.3	
Total ...	...	...	...	...	36.7	
Deductions ...	...	...	...	...	10.0	
Points gained...	...	...	...	...	26.7	
Remarks and Awards ...	...	...	...	...	...

CLASS 29.—DEXTER HEIFER (ENTERED IN OR ELIGIBLE FOR THE HERD BOOK. BORN ON OR AFTER 1ST AUGUST, 1921).

Number Name	...	...	...	...	...	430 Woodleigh Daphne.	433 Creole of Cophorne.
Born	...	...	...	...	...	Aug. 21, 1921. 664	June 18, 1922. 560
Live weight, in lbs.	...	...	...	...	...	June 10. 132	Sept. 26. 24
Last Calved	...	...	...	...	...	Morn	Morn
Days since Calving	...	...	...	...	...	Even	Even
Weight of Milk, 1st day	...	...	...	...	...	13-7	12-1
Weight of Milk, 2nd day	...	...	...	...	...	13-2	12-1
Total	...	...	...	...	...	26-9	8-8
Average	...	...	...	...	...	21-6	9-0
Percentage	...	...	...	...	...	13-45	20-9
Composition of	...	...	...	...	...	10-8	17-2
the Milk.	...	...	...	...	...	8-6	8-6
Actual weight of Fat, in lbs.	...	...	...	...	...	4-80	4-37
						6-76	6-84
Calculation of Points multiply by 20...	...	...	...	...	...	9-38	9-53
						9-64	9-36
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	14-18	13-90
						16-40	16-20
Calculation of Points multiply by 4	...	...	...	...	...	0-65	0-73
						0-73	0-588
For time since Calving	...	...	...	...	...	13-0	9-2
						14-6	11-8
For weight of Milk (lbs.)	...	...	...	...	...	1-27	1-04
						1-04	0-804
For weight of Fat (lbs. × 20)	...	...	...	...	...	5-1	4-0
						4-2	3-2
For weight of Solids other than Fat (lbs. × 4)	...	...	...	...	...	9-2	—
						24-3	19-1
Total	...	...	...	...	...	27-6	21-0
						9-3	7-2
Deductions	...	...	...	...	...	70-4	47-3
						—	—
Points gained	...	...	...	...	...	70-4	47-3
						—	—
Remarks and Awards	...	...	...	...	...	1st Prize.	2nd Prize.

CLASS 30.—COW OF ANY BREED—MILKED THREE TIMES DAILY.

Number ... Name ...	...	...	...	...	434 Terling Cherry 10th. Sept. 14, 1915. 1,556 Sept. 26. 24	437 Beccles Silver Queen. Feb. 11, 1918. 1,366 Sept. 27. 23	438 Doreen. 1,348 Sept. 28. 22
Born ...	...	...	...	...
Live weight, in lbs.	...	...	...	...
Last Calved ...	...	...	...	...
Days since Calving	...	...	...	...
Weight of Milk, 1st day	...	...	...	...	Morn.	Aftn.	Even.
Weight of Milk, 2nd day	...	...	...	...	34.8	29.2	25.8
Total ...	...	...	...	...	29.4	26.5	22.4
Average ...	...	...	...	...	64.2	55.7	48.2
...	...	...	...	...	32.1	27.85	24.1
Percentage	...	...	...	...	2.97	2.64	2.89
Composition of	...	...	...	...	8.79	8.74	8.71
the Milk. { Solids other than Fat	...	...	...	...	11.76	11.38	11.60
Actual weight of Fat, in lbs. ...	...	...	...	...	0.96	0.735	0.695
Calculation of Points multiply by 20...	...	...	...	...	19.2	14.7	13.9
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	2.82	2.44	2.10
Calculation of Points multiply by 4 ...	...	...	...	...	11.3	9.8	8.4
Points { For time since Calving For weight of Milk (lbs.) For weight of Fat (lbs. × 20) For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	84.1	75.5	59.3
	...	...	...	...	47.8	58.3	60.4
	...	...	...	...	29.5	20.1	20.1
	...	...	...	...	161.4	159.9	139.8
Total ...	...	...	...	...	30.0	—	20.0
Deductions ...	...	...	...	...	131.4	159.9	119.8
Points gained...	...	...	...	...
Remarks and Awards ...	...	...	...	...	1st Prize.		
					2nd Prize.		
					3rd Prize.		

THE MILKING TRIALS FOR GOATS, 1924.

By T. W. PALMER.

THE classification in the Milking Competition for goats was exactly the same as last year, *i.e.*, one class for She Goats qualified as "Star" or "Q Star" milkers, and the other class for Goats not eligible to compete in the "Star" Class.

Entries.—The total number of goats entered was 33, an increase of two on the figures for 1923. Sixteen goats were entered in the Star Class and 17 in the Non-Star Class. Of the latter, two were wrongly entered, as they had already won "Stars," consequently they were disqualified. Twenty-five goats competed—12 in Class 35 and 13 in Class 36, the number of samples taken being 50.

Class 35. Star or Q Star Milkers.—The leading goat here was Mrs. Maurice's "Cintra Pepita," Q*Q*Q*, her average yield of milk being 11.25 lb., butter fat 5.03 per cent. and 5.56 per cent., after being in milk 203 days. Strange to say, the winner of the second prize, Miss Chamberlain's "Welfare of Westons," Q*Q*, held a similar position last year. Her yield on this occasion was 9.6 lb. (as against 8.9 lb. in 1923), butter fat 4.60 per cent. and 5.54 per cent., lactation period 207 days, or six days more than at the previous Dairy Show. Mrs. Morcom's "Leazes Fortitude," Q**, was third, with a yield of 9.85 lb., butter fat 4.29 per cent. and 3.37 per cent., lactation period 248 days.

Class 36. Goats not eligible for Class 37.—Mrs. Abbey had the pleasure of winning all three prizes in this class with goats of her own breeding. The 1st Prize winner, "Didgemere Dawdler," gave a yield of 9.3 lb., butter fat 4.89 per cent. and 4.85 per cent., after being in milk 237 days. The second goat was "Didgemere Damask," yield 8.1 lb., butter fat 5.72 per cent. and 7.55 per cent., lactation period 231 days. The third prize winner, "Didgemere Delilah," gave 8.25 lb. of milk with butter fat 5.63 per cent. and 6.20 per cent. after being in milk 233 days. It is interesting to observe that the three prize winners in this class, with two others of the competitors, qualified for the Q Star, whilst three of the goats in Class 35, which had previously only qualified for the Star, are now entitled to the Q Star.

In the Inspection Classes, the goats were classified exactly the same as at the 1923 Dairy Show, and I give later the results in the Milking Trials according to breeds.

Class 37. Toggenburg.—Of the three goats entered in the Inspection Class, only one was entered in the Milking Competition. This goat gave a yield of 6.45 lb. after being in milk 143 days, but was under 4 per cent. butter fat in the morning milk.

Class 38. She Goats, British Toggenburg.—Eleven goats entered for inspection, ten of whom were also entered in the Milking Trials. Of the latter, two were absent. The goat gaining the highest number of points was Mrs. Potton's "Empress March," whose total was 23.49. She was Reserve in Class 35 (Milking), and also Reserve in her Inspection Class. Two other goats in this Inspection Class obtained a High Commendation in the Milking Trials. The average yield of the eight goats was 6.8 lb., whilst three of the animals were under 4 per cent. butter fat in the morning milk.

Class 39. British Alpine.—Five entries in the Inspection Class, four of whom were entered for Milking. Mrs. Abbey's "Didgemere Dawdler" was first in inspection, and also first in the Milking Trials (Class 36). Her yield was 9.3 lb. after being in milk 237 days. She was followed by her stable companion, "Didgemere Delilah," who gained second prize in Inspection, and third prize in the Non-Star Milking Competition. One of the other goats gained a High Commendation. The average yield of this class was 8.32 lb.—quite good. All the goats were well over standard as far as butter fat content. "Didgemere Dawdler," with a British Alpine goatling, "Didgemere Dream," won the Dewar Perpetual Challenge Cup.

Class 40. Saanen.—Three entries in the Inspection Class, one in the Milking, but unfortunately this goat died at the Show.

Class 41. Anglo Nubian.—Five goats were entered for Inspection, two of whom were also entered in the Milking Trials, but owing to Foot and Mouth Disease Regulations, neither could attend at the Hall.

Class 42. Any Other Variety.—Thirteen entries for Inspection and 12 for Milking—three of the latter absent.

The outstanding goat in this class was Mrs. Maurice's "Cintra Pepita, Q*Q*Q*", who not only won 1st Prize in Inspection and was awarded the Challenge Certificate and Cup for the best goat in the Show by Inspection, but she also won the 1st Prize in the Milking (Class 35) with a yield of 11.25 lb. after being in milk 203 days. Her butter fat both a.m. and p.m. was over 5 per cent. This goat qualified for the Baroness Burdett Coutt's Cup, Dual Purpose Challenge Certificate, Tremedda Selene Cup and Dewar Twenty Guinea Trophy. The next goat in order of merit was Miss Chamberlain's "Welfare of Westons." This goat gave 9.6 lb. of milk, after being in Milk 207 days, and strangely enough, this animal gained second prize in Inspection, and in the Milking Competition was Reserve for every special

prize that "Cintra Pepita" Q*Q*Q*, won. The average yield for this class was 8.11 lb. Two of the goats were under the standard for butter fat in the evening milking.

It is worthy of note that no goat gave under 3 per cent. of butter fat, therefore no points were deducted. Of the 50 samples of milk analysed, six were over 3 per cent. and under 4 per cent.; 21 were 4 per cent. and under 5 per cent.; 12 were 5 per cent. and under 6 per cent.; nine were 6 per cent. and under 7 per cent., and two were 7 per cent. and under 8 per cent. The lowest percentage of butter fat was 3.28. This sample of milk also contained 8.34 per cent. solids other than fat, or a total of 11.62 per cent., whilst the highest percentage of butter fat was 7.55, given by two different animals. In one case, the percentage for solids was 8.87, or a total of 16.42 per cent., and in the other case 9.03 with a total of 16.58 per cent.

I append a tabulated statement (No. I) of the goats that were entered for both Inspection and Milking, whilst I have brought Table No. II up to date.

TABLE I.

Class.	Description.	Number in Class.		Average Live Weight	Average Yield of Milk.	Highest Yield.	Lowest Yield.	Average period of Lactation.	Average Fat.	Average Solids not Fat.	Number of Animals below Standard for Fat.		Average points claimed.
		Entered.	Com- peting.										
37	Toggenburg ...	1	1	lbs. 124	lbs. 6.45	lbs. 6.45	lbs. —	days. 143	4.99	8.67	—	—	16.57
38	British Toggenburg ...	10	8	142	6.80	8.95	4.60	194	4.74	8.60	—	—	18.10
39	British Alpine ...	4	4	158	8.32	9.30	7.40	204	5.35	8.94	—	—	22.80
40	Saanen ...	1	—	—	—	—	—	—	—	—	—	—	—
41	Anglo-Nubian ...	2	—	—	—	—	—	—	—	—	—	—	—
42	Any other variety ...	12	9	146	8.10	11.25	4.05	193	4.85	8.94	—	—	21.26

TABLE II.

Description of Class.	Year of Show.	No. of Animals	Average live weight of each Animal.	Average period of Lactation.	Average weight of Milk.		Average weight of Milk per day.	Highest Yield.	Lowest Yield.	Percentages.			
					Fat.					Solids.			
					a.m.	p.m.				a.m.	p.m.		
Star Milkers ...	1919	6	—	261	3.6	3.1	6.7	10.8	4.5	4.13	3.89	8.89	9.02
Star or Q Star Milkers	1920	7	130	219	3.9	3.2	7.1	9.0	4.9	4.61	4.72	9.02	9.17
"	1921	16	145	192	3.7	3.1	6.8	11.3	4.1	5.64	5.50	9.12	9.27
"	1922	14	144	190	4.4	3.6	7.0	12.6	5.6	4.60	4.52	9.07	9.19
"	1923	6	142	188	4.5	3.5	8.0	10.2	6.6	4.31	4.48	9.22	9.21
"	1924	12	149	200	4.5	3.3	7.8	11.25	4.65	4.81	5.25	8.78	8.98
Not eligible as Star Milkers	1919	15	—	220	2.1	2.0	4.1	6.8	0.7	5.82	5.91	9.74	9.78
"	1920	20	113	196	2.6	2.2	4.8	8.7	1.0	5.07	4.95	9.30	9.28
"	1921	14	123	145	3.3	2.8	6.1	9.4	2.9	5.10	4.96	8.75	8.88
"	1922	21	131	188	3.2	2.9	6.1	8.5	3.6	4.41	4.62	8.98	9.05
"	1923	5	127	147	3.9	2.9	6.8	8.5	5.1	3.96	4.78	8.93	8.99
"	1924	13	138	182	4.8	3.1	7.9	9.8	4.0	4.88	5.58	8.75	8.88

CLASS 35.—SHE GOATS, QUALIFIED AS "STAR OR 'Q' STAR MILKERS"

Number ... Name ...	...	...	...	...	474 Honey-mead Dairy.	480 Wistful of Westons.	481 Rayleigh Primrose.	482 Empress March.
Born	...	...	...	...	Mar. 31, 1913.	Feb. 7, 1921.	Mar. 1918.	Mar. 1919.
Live weight, in lbs.	...	...	...	...	108	170	132	127
Last Kid	...	...	...	...	April 13.	April 15.	May 2.	April 8.
Days since Kidding	...	...	...	...	190	188	171	195
Weight of Milk, 1st day	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	...	...	...	...	3-1 1-9	4-6 3-6	4-1 2-9	5-3 3-5
Total	...	...	...	...	2-3 2-0	4-6 3-6	4-0 3-0	5-3 3-8
Average	...	...	...	...	5-4 3-9	9-2 7-2	8-1 5-9	10-6 7-3
Percentage { Fat ... Composition of { Solids other than Fat the Milk. { Total Solids	...	...	...	...	2-7 1-95	4-6 3-6	4-05 2-95	5-3 3-65
Actual weight of Fat, in lbs.	...	...	...	...	6-72 6-54	4-23 6-37	3-85 4-27	4-09 5-34
Calculation of Points multiply by 20...	...	...	...	...	9-66 10-00	8-93 9-03	8-13 8-11	7-85 8-08
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	16-38 16-54	13-16 15-40	11-98 12-38	12-84 13-42
Calculation of Points multiply by 4 ...	...	...	...	...	0-1815 0-1275	0-194 0-229	0-156 0-126	0-265 0-195
Points { For time since Kidding ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat ... (lbs. × 4) ...	...	...	...	...	0-261 0-195	3-88 4-58	3-12 2-52	5-3 3-9
Total ...	...	...	...	...	1-044 0-78	0-412 0-325	0-329 0-240	0-416 0-295
Deductions ...	...	...	...	...	2-5	1-648 1-300	1-316 0-96	1-664 1-18
Points gained...	...	...	...	...	4-65	2-4	2-1	2-5
Remarks and Awards ...	...	...	...	...	6-18	8-2	7-0	8-95
	...	...	...	...	1-82	8-46	5-64	9-2
	...	...	...	...	15-15	2-95	2-28	2-84
	...	...	...	...	—	22-01	17-02	23-49
	...	...	...	...	15-15	22-01	17-02	23-49
	...	...	...	...	Highly Commended.	Highly Commended.	Highly Commended.	Reserve and Highly Commended.

CLASS 35.—SHE GOATS (QUALIFIED AS "STAR OR 'Q' STAR MILKERS")—Continued.

Number ... Name ...	...	...	...	...	483 Rayleigh Dancer.	484 Rayleigh Queen.	488 Rayleigh Harebell.	494 Tremetda Lalage 2nd.
Born ...	...	...	...	...	Mar. 2, 1922. 146	Mar. 20, 1922. 133	April 12, 1920. 158	Feb. 27, 1920. 157
Live weight, in lbs. ...	...	...	...	...	April 11. 192	Mar. 20. 214	April 6. 197	Mar. 27. 207
Last Kided ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Days since Kidding ...	...	...	...	...	4-7 2-9	3-9 2-8	3-2 2-2	5-0 3-1
Weight of Milk, 1st day ...	...	...	...	...	4-3 3-4	3-6 2-9	3-1 2-2	4-8 3-8
Weight of Milk, 2nd day ...	...	...	...	...	9-0 6-3	7-5 5-7	6-3 4-4	9-8 6-9
Total ...	...	...	...	...	4-5 3-15	3-75 2-85	3-15 2-2	4-9 3-45
Average ...	...	...	...	...	4-82 5-68	3-78 4-89	5-38 5-59	5-09 6-10
Percentage { Fat ...	...	...	...	...	9-18 9-22	8-70 8-55	8-44 8-85	9-17 9-56
Composition of { Solids other than Fat	...	...	...	...	14-00 14-90	12-48 13-44	13-82 14-44	14-26 15-66
the Milk. { Total Solids	...	...	...	...	0-217 0-178	0-142 0-139	0-170 0-123	0-250 0-211
Actual weight of Fat, in lbs. ...	...	...	...	...	4-34 3-56	2-84 2-78	3-4 2-46	5-0 4-22
Calculation of Points multiply by 20...	...	...	...	...	0-413 0-291	0-327 0-244	0-266 0-195	0-450 0-330
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-652 1-164	1-308 0-976	1-064 0-78	1-8 1-32
Calculation of Points multiply by 4 ...	...	...	...	...	2-5	2-9	2-6	2-7
{ For time since Kidding	...	...	...	...	7-65	6-6	5-35	8-35
{ For weight of Milk (lbs.)	...	...	...	...	7-90	5-62	5-86	9-22
{ For weight of Fat (lbs. × 20)	...	...	...	...	2-82	2-28	1-84	3-12
{ For weight of Solids other than Fat	...	...	...	...	20-87	17-40	15-65	23-39
{ (lbs. × 4) ...	...	...	...	...	—	—	—	—
Total ...	...	...	...	...	20-87	17-40	15-65	23-39
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	20-87	17-40	15-65	23-39
Remarks and Awards ...	...	...	...	...	Highly Commended.			Highly Commended.

CLASS 35.—SHE GOATS (QUALIFIED AS "STAR OR 'Q' STAR MILKERS")—Continued.

Number ... Name ...	...	...	...	504 Cintra Pepita.	507 Rayleigh Princess.	508 Welfare of Westons.	514 Leazes Fortitude.
Born ...	...	...	...	Feb. 7, 1921. 197	Feb. 24, 1922. 151	Jan. 20, 1921. 178	Mar. 14, 1919. 145
Live weight, in lbs. ...	...	...	...	Mar. 31. 203	April 7. 196	Mar. 27. 207	Feb. 15. 248
Last KidDED ...	...	...	...	
Days since Kidding ...	...	...	...	
Weight of Milk, 1st day ...	...	...	...	Morn Even 6-8 4-2	Morn Even 4-0 2-4	Morn Even 5-6 4-2	Morn Even 5-3 4-3
Weight of Milk, 2nd day ...	...	...	...	6-3 5-2	3-1 2-6	5-2 4-2	5-8 4-3
Total ...	...	...	...	13-1 9-4	7-1 5-0	10-8 8-4	11-1 8-6
Average ...	...	...	...	6-55 4-7	3-55 2-5	5-4 4-2	5-55 4-3
Percentage { Fat ...	...	...	...	5-08 5-56	4-96 3-82	4-60 5-54	4-29 3-37
Composition of { Solids other than Fat	...	...	...	8-37 8-66	8-88 8-82	9-08 9-40	9-01 9-51
the Milk. { Total Solids ...	...	...	...	13-40 14-22	13-84 12-64	13-68 14-94	13-30 12-88
Actual weight of Fat, in lbs. ...	...	...	...	0-330 0-261	0-176 0-0956	0-249 0-233	0-238 0-145
Calculation of Points multiply by 20..	...	...	...	.60 5-22	3-52 1-912	4-98 4-66	4-76 2-9
Actual weight of Solids other than Fat, in lbs.	...	...	...	0-549 0-406	0-316 0-221	0-491 0-395	0-501 0-410
Calculation of Points multiply by 4 ...	...	...	...	2-196 1-624	1-264 0-884	1-964 1-580	2-004 1-64
For time since Kidding ...	...	...	...	2-7	2-6	2-7	3-4
For weight of Milk (lbs.) ...	...	...	...	11-25	6-05	9-6	9-85
For weight of Fat (lbs. × 20) ...	...	...	...	11-82	5-43	9-64	7-66
Points { For weight of Solids other than Fat	...	...	...	3-82	2-15	3-54	3-64
(lbs. × 4) ...	...	...	...	29-59	16-23	25-48	24-55
Total ...	...	...	...	—	—	—	—
Deductions ...	...	...	...	29-59	16-23	25-48	24-55
Points gained...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	1st Prize. Cintra. Barnard's Cup. Reserve for Trenchard Solene Cup. Bewar Trophy. Reserve for Bewar Cup.	16-23	25-48	3rd Prize.

CLASS 36.—SHE GOATS (NOT ELIGIBLE FOR CLASS 35).

Number ... Name ...	...	...	...	...	475 Didgmere Danask. Feb. 25, 1922. 154 Mar. 3. 231	476 Didgmere Dough. Feb. 10, 1923. 118 July 12. 100	477 Vertue. — 124 May 30. 143	486 Fettham Peony. Feb. 25, 1922 132 Mar. 30. 204
Born ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Live weight, in lbs. ...	...	...	...	...	4-7 3-3	3-7 3-1	3-6 3-0	3-5 2-8
Last Kiddled ...	...	...	...	...	4-6 3-6	4-3 3-3	3-9 2-4	3-2 2-7
Days since Kidding ...	...	...	...	...	9-3 6-9	8-0 6-4	7-5 5-4	6-7 5-5
Weight of Milk, 1st day ...	...	...	...	...	4-65 3-45	4-0 3-2	3-75 2-7	3-35 2-75
Weight of Milk, 2nd day ...	...	...	...	...	5-72 7-55	7-55 6-84	3-74 6-25	3-28 4-16
Total ...	...	...	...	...	8-40 8-87	9-03 8-98	8-62 8-73	8-34 8-38
Average ...	...	...	...	...	14-12 16-42	16-58 15-82	12-36 14-98	11-62 12-54
Percentage Composition of the Milk. { Fat ... Solids other than Fat	...	...	...	...	0-266 0-261	0-302 0-219	0-140 0-169	0-110 0-114
Actual weight of Fat, in lbs. ...	...	...	...	...	5-32 5-22	6-04 4-38	2-8 3-38	2-2 2-28
Calculation of Points multiply by 20... Actual weight of Solids other than Fat, in lbs.	...	...	...	...	0-390 0-306	0-3612 0-288	0-324 0-236	0-280 0-231
Calculation of Points multiply by 4 ...	...	...	...	...	1-560 1-224	1-445 1-152	1-296 0-944	1-12 0-924
Points { For time since Kidding ... For weight of Milk (lbs.) ... For weight of Fat (lbs. × 20) ... For weight of Solids other than Fat (lbs. × 4) ...	...	...	...	...	3-1 8-10 10-54	1-0 7-2 10-42	1-7 6-45 6-18	2-8 6-10 4-48
Total ...	...	...	...	...	2-78	2-60	2-34	2-04
Deductions ...	...	...	...	...	24-52	21-22	16-57	15-42
Points gained... Remarks and Awards ...	...	...	...	...	24-52	21-22	16-57	15-42
	...	...	...	...	2nd Prize.	Highly Commended.		

CLASS 36.—SHE GOATS (NOT ELIGIBLE FOR CLASS 35)—Continued.

Number ... Name ...	487 Rayleigh Pierette.	491 Didgemere Dawdler.	492 Didgemere Dellalah.	493 Didgemere Doreen.
Born ...	April 9, 1922 144	June 1, 1921. 166	Mar. 10, 1922. 149	Mar. 4, 1921. 163
Lave weight, in lbs. ...	April 12. 191	Feb. 26. 237	Mar. 1. 233	June 3. 139
Last Kiddled ...				
Days since Kidding ...				
Weight of Milk, 1st day	Morn Even	Morn Even	Morn Even	Morn Even
Weight of Milk, 2nd day	2.7 • 2.0	5.5 3.7	4.7 3.4	4.6 3.0
Total	2.4 2.1	5.4 4.0	4.8 3.6	3.9 3.3
Average ...	5.1 4.1	10.9 7.7	9.5 7.0	8.5 6.3
Percentage { Fat ...	2.55 2.05	5.45 3.85	4.75 3.5	4.25 3.15
Composition of { Solids other than Fat	4.27 4.95	4.89 4.85	5.63 6.20	4.59 5.47
the Milk. { Total Solids	8.79 9.07	8.59 8.71	8.77 8.76	8.81 9.15
Actual weight of Fat, in lbs. ...	13.06 14.02	13.48 13.56	14.40 14.96	13.40 14.62
Calculation of Points multiply by 20 ...	0.109 0.102	0.266 0.187	0.267 0.217	0.195 0.172
Actual weight of Solids other than Fat, in lbs.	2.18 2.04	5.32 3.74	5.34 4.34	3.9 3.44
Calculation of Points multiply by 4 ...	0.224 0.186	0.468 0.336	0.417 0.307	0.375 0.289
Points { For time since Kidding ...	0.896 0.744	1.872 1.344	1.668 1.228	1.500 1.156
For weight of Milk (lbs.) ...	2.5	3.2	3.2	1.6
For weight of Fat (lbs. × 20)	4.60	9.3	8.25	7.4
For weight of Solids other than Fat (lbs. × 4)	4.22	9.06	9.68	7.34
Total ...	1.64	3.22	2.30	2.66
Deductions ...	12.96	24.78	24.03	19.00
Points gained ...	—	—	—	—
Remarks and Awards ...	12.96	24.78	24.03	19.00
		1st Prize. Dewar Cup.	3rd Prize.	

CLASS 36.—SHE GOATS (NOT ELIGIBLE FOR CLASS 35)—Continued.

Number ... Name ...	...	...	...	...	506 Zena.	510 Riding Primrose.	511 Riding Topsy 2nd.	512 Atherstone Collette.
Born ...	...	...	...	...	Jan. 17, 1922. 143	Jan. 27, 1920. 116	April 19, 1920. 135	Feb. 10, 1921. 146
Live weight, in lbs.	...	...	...	...	Mar. 19. 215	April 18. 185	April 13. 190	Feb. 13. 250
Last KidDED ...	...	...	...	...	Morn Even	Morn Even	Morn Even	Morn Even
Days since KidDing ...	...	...	...	...	3-9 2-4	2-1 1-9	3-6 3-2	5-6 4-2
Weight of Milk, 1st day	...	...	...	...	3-0 2-4	2-3 1-8	3-7 3-1	5-5 4-3
Weight of Milk, 2nd day	...	...	...	...	6-9 4-8	4-4 3-7	7-3 6-3	11-1 8-5
Total ...	...	...	...	...	3-45 2-4	2-2 1-85	3-65 3-15	5-55 4-25
Average ...	...	...	...	...	5-56 6-63	4-54 6-00	4-66 4-84	4-33 4-00
Percentage { Fat ...	...	...	...	...	9-00 9-11	9-06 9-42	9-06 8-96	8-21 8-02
Composition of { Solids other than Fat	...	...	...	...	14-56 15-74	13-60 15-42	13-72 13-80	12-54 12-02
the Milk. { Total Solids	...	...	...	...	0-192 0-159	0-10 0-111	0-170 0-153	0-241 0-170
Actual weight of Fat, in lbs. ...	...	...	...	...	3-84 3-18	2-0 2-22	3-4 3-06	4-82 3-4
Calculation of Points multiply by 20...	...	...	...	...	0-311 0-219	0-199 0-174	0-331 0-282	0-456 0-341
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	1-244 0-876	0-796 0-696	1-324 1-128	1-824 1-364
Calculation of Points multiply by 4 ...	...	...	...	...	2-9	2-4	2-5	3-5
{ For time since KidDing	...	...	...	...	5-85	4-05	6-80	9-80
{ For weight of Milk (lbs.)	...	...	...	...	7-02	4-22	6-46	8-22
{ For weight of Fat (lbs. × 20)	...	...	...	...	2-12	1-49	2-45	3-19
{ For weight of Solids other than Fat	...	...	...	...	17-89	12-16	18-21	24-71
{ (lbs. × 4) ...	...	...	...	...	—	—	—	—
Total ...	...	...	...	...	17-89	12-16	18-21	24-71
Deductions ...	...	...	...	...	—	—	—	—
Points gained...	...	...	...	...	—	—	—	—
Remarks and Awards ...	...	...	...	...	Disqualified, wrongly entered.	Disqualified, wrongly entered.	Disqualified, wrongly entered.	Disqualified, wrongly entered.

CLASS 36.—SHE GOATS (NOT ELIGIBLE FOR (CLASS 35))—Continued.

Number ...	...	...	...	...	...	...	516
Name ...	...	...	...	...	...	...	Lazes Fibarena.
Born ...	...	...	...	...	...	...	May 1, 1923.
Live weight, in lbs.	...	...	...	...	...	...	102
Last Kidled ...	...	...	...	...	...	...	Sept. 3.
Days since Kidling	...	...	...	...	...	...	47
Weight of Milk, 1st day	...	...	...	...	...	Morn	Even
Weight of Milk, 2nd day	...	...	...	...	...	5.4	4.2
Total	...	...	...	...	...	5.4	4.3
Average ...	...	...	...	...	...	10.8	8.5
Percentage { Fat	...	...	...	...	...	5.4	4.25
Composition of { Solids other than Fat	...	...	...	...	...	4.72	4.88
the Milk. { Total Solids	...	...	...	...	...	9.08	9.26
Actual weight of Fat, in lbs.	...	...	...	...	...	13.80	14.14
Calculation of Points multiply by 20...	...	...	...	...	...	0.255	0.207
Actual weight of Solids other than Fat, in lbs.	...	...	...	...	...	5.1	4.14
Calculation of Points multiply by 4 ...	...	...	...	...	...	0.492	0.394
Points { For time since Kidling	...	...	...	...	...	1.968	1.576
{ For weight of Milk (lbs.)	...	...	...	...	...	0.1	9.65
{ For weight of Fat (lbs. \times 20)	...	...	...	...	...	9.24	3.54
{ For weight of Solids other than Fat	...	...	...	...	...	22.53	—
(lbs. \times 4) ...	...	...	...	...	...	22.53	Reserve.
Total ...	...	...	...	...	...	...	...
Deductions ...	...	...	...	...	...	...	...
Points gained...	...	...	...	...	...	...	...
Remarks and Awards ...	...	...	...	...	...	...	...

THE DAIRY SHOW BUTTER TESTS OF 1924.

By R. H. EVANS, B.Sc.

The Prizes in the Butter Tests were awarded according to the following scale of points :—

One point for every ounce of butter ; one point for every completed 10 days since calving (calculated to the first day of the Show), deducting the first 40 days. Maximum allowance for period of lactation, 12 points.

Fraction of ounces of butter, and incomplete periods of less than 10 days, to be worked out in decimals, and added to the total points.

In the case of cows obtaining the same number of points, the prize to be awarded to the cow that has been longest time in milk.

A Certificate giving the last date of calving (which must be before 9 a.m. on October 7th), must reach the Secretary by Saturday, October 11th.

No prize will be awarded to animals in the Butter Tests which do not come up to the following standard :—

Breed.	Cows under 5 years. Points.	Cows 5 years and over. Points.
Pedigree Shorthorns	30	34
Non-Pedigree Shorthorns	30	34
British Friesians	30	34
Lincoln Red Shorthorns	30	34
Jerseys	30	35
Guernseys	27	30
Ayrshires	27	30
Red Polls	30	34
South Devons	30	34
Kerries	26	29
Dexters	26	29
Devons	27	30
Welsh	27	30
Blue Albions	30	34

Certificates of Merit and Highly Commended Cards will be given to animals, other than Prize Winners, that reach the above standard.

The total number of entries, and the actual number tested at the 1924 Tests, were as follows :—

	Number entered.	Number tested.
Pedigree Shorthorns	25	12
Non-Pedigree Shorthorns	17	6
Lincoln Red Shorthorns	16	8
British Friesians	39	23
South Devons	4	0
Devons	8	3
Red Polls	23	17
Blue Albions	10	4
Ayrshires	25	15
Guernseys	21	16
Jerseys	41	32
Kerries	12	10
Dexters	6	2
Total	247	148

The large number of absentees was partly due to the outbreak of Foot and Mouth Disease prevalent in many parts of the country.

The number of Shorthorns tested shows a decrease of 16, as compared with the 1923 figure. There was very little difference, however, in the average results for the two years. The increase in the yield of butter obtained at the 1923 Show, was well maintained—the average yield for the 18 cows tested at the 1924 Show being 1 lb. 15 ozs., with a butter ratio of 1 to 25·54. Ten of the 18 cows tested in this class yielded 2 lbs. or over of butter in the 24 hours during which the test was carried out. The highest yielder in the class was Major Yates' "Clara's Beauty," her yield amounting to 2 lbs. 10 ozs. This cow yielded 4 lbs. 0½ ozs. of butter at the 1923 Show, and this year's yield proves that the animal is a consistent butter yielder.

There was a slight falling off in the average yield of butter obtained from the eight Lincolnshire Reds tested, the 1924 figure being 1 lb. 12 ozs., as compared with 1 lb. 14½ ozs. obtained at the 1923 Dairy Show. Mr. Jno. Evens & Son's "Burton Ruby Spot 14th" carried premier honours, with 45 points, Mr. S. Reading's "Langford Queen 7th" running her closely, with 44·5 points. The former yielded 2 lbs. 1 oz. of butter, 162 days after calving, thus gaining the full 12 points for lactation, while the latter yielded 2 lbs. 12½ ozs., gaining no points for lactation.

The average weight of butter yielded by the British Friesians showed a slight increase on the 1923 figure—1 lb. 12 ozs., as compared with 1 lb. 11¼ ozs.

The first prize in this Class was awarded to Lord Rayleigh's "Terling Skylark 14th," with a yield of 2 lbs. 12½ ozs. of butter, showing a butter ratio of 1 to 25.1. The second place was taken by Mr. Holt Thomas' "Blackmore Ena 2nd," her yield in the 24 hours amounting to 2 lbs. 8½ ozs. and a butter ratio of 1 to 24.1. Mr. E. Furness' "Hamels Beryl" gave a yield of 2 lbs. 6 ozs., with a butter ratio of 1 to 23.9.

In the Red Poll Class, the average amount of butter yielded showed a slight decrease. The average weight in 1923 was 1 lb. 9¾ ozs., while at the 1924 Show, the figure was 1 lb. 7½ ozs. The class was a good average class, with no outstanding performances. The highest yield was obtained from Mr. Horbury's "Sudborne Mina." This cow yielded 2 lbs. 5½ ozs. of butter from 45 lbs. 12 ozs. milk, showing a butter ratio of 1 to 19.6.

The Jerseys, as usual, proved an excellent class, the average yield of butter being 1 lb. 15½ ozs., with an average butter ratio of 1 to 17.75—a most worthy performance. These figures show a marked improvement on the 1923 results, when the average yield was only 1 lb. 10 ozs., and the butter ratio 1 to 18.49. We confidently look forward to the average yield in this class amounting to 2 lbs. of butter in the 24 hours. The premier place was taken by Mr. E. Bruce Ward's "Princess Marigold." Her yield of butter amounted to 2 lbs. 9¼ ozs., having calved 152 days. Mr. E. Birkitt's "Golden Raspberry" was second, with a yield of 2 lbs. 7 ozs., having been in milk for 254 days. This cow—which in 1923 belonged to Mr. Grosvenor Berry—was awarded the National Butter Cup for the second year in succession. The third prize was awarded to Mr. Bruce Ward's "Last of the Marigolds."

The average yield of butter in the Guernsey Class was 1 lb. 9 ozs.—a slight decrease on the 1923 figure. The first prize was awarded to Mr. J. B. Body's "Morland Lady Richmond," her yield being 1 lb. 12 ozs., after having calved 165 days. Sir J. Remnants' "Southern Starette" was second, her yield being 1 lb. 11 ozs., having been 198 days in milk.

The 15 Ayrshires tested were the best class in the Show, as far as the average amount of butter was concerned. This class averaged 2 lbs. 0¼ ozs. of butter in the 24 hours, a performance which is very seldom met with at the Dairy Show. The average butter ratio in this class was 1 to 22.65, which is an indication of the richness of the milk yielded. Lieut.-Col. R. E. Cecil's "Netherton Queen Greenfield 4th" yielded 3 lbs. 3 ozs. of butter, the highest individual yield of the 1924 Show. This animal had a butter ratio of 1 to 19.0, a most excellent performance. The second prize was awarded to Mr. A. W.

Montgomerie's "Lessnessock Dainty Maid," a cow yielding 54 lbs. of milk in the 24 hours, from which 2 lbs. 11½ ozs. of butter was obtained, giving a butter ratio of 1 to 20.

The ten Keries shown were an average class for this breed. Three animals only obtained the necessary points to qualify for a prize. Lieut.-Col. J. Bennett Standford's "Pythouse Aggie" took first place, with a yield of 2 lbs. 2½ ozs., giving a butter ratio of 1 to 19.6. "Buckhurst Surprise," the property of the Theosophical Educational Trust, was awarded a prize of £2, her yield being 1 lb. 8½ ozs. This cow had been in milk 124 days.

Of the two Dexters tested, "Woodleigh Daphne," the property of Col. W. O. Gibbs, qualified for a prize of £3.

Four Blue Albions were tested, and their performance on the whole was fairly creditable. Three of the four obtained the requisite number of points to qualify for an award. Mr. A. Trafford's "Bradbourne Maid" yielded 2 lbs. 3½ ozs. of butter, showing a butter ratio of 1 to 19.6, and Lieut.-Col. W. E. Harrison's "Poplars Beauty," with a yield of 2 lbs. 1 oz. of butter came in a good second. The average yield for the four animals was 1 lb. 15¼ ozs. of butter, the average butter ratio being 1 to 23.34.

Only three Devons were tested, and the prize of £3 was awarded to Messrs. R. A. Clarke & Sons' "Gentle," her yield being 1 lb. 15½ ozs.

In view of the great interest taken in the Inter-breed Challenge Trophies, it may be of value to tabulate the Awards.

		<i>Breed of Winner.</i>		<i>Breed of Reserve.</i>
Morrison Trophy	...	British Friesian	...	Pedigree Shorthorn.
Spencer Cup	...	Ayrshire	...	British Friesian.
National Butter Cup	...	Jersey	...	Jersey.

The conditions attached to these Trophies, which are offered annually, are set out below.

The "Morrison" Challenge Trophy awarded to the Owner of the Cow exhibited at three consecutive London Dairy Shows gaining the greatest number of points at the three Shows by Inspection, Milking Trial and Butter Test.

The "Spencer" Challenge Cup, awarded to the Owner of the best Dairy Cow in the Show, gaining the greatest number of points by Inspection, Milking Trial and Butter Test.

The "National" Butter Challenge Cup, awarded to the Owner of the Cow or Heifer gaining the greatest number of points per 1,000 live weight in the Butter Test.

My best thanks are due to my three colleagues, Mr. J. G. W. Stafford, and Messrs. T. W. Hammond and L. J. Craufurd (representing the English Jersey Cattle Society), who rendered me valuable assistance in the carrying out of the tests.

The following table gives the average results for all breeds competing :—

Year.			Total No. of Cows.	Average weight of 24 hours' Milk.	Average Yield of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs.	lbs. ozs.		
1919	...	...	94	$37\frac{1}{2}$	1 $9\frac{3}{4}$	23.43	28.61
1920	...	...	111	39	1 $9\frac{1}{4}$	24.21	28.25
1921	...	...	173	$39\frac{3}{4}$	1 $6\frac{1}{2}$	25.35	27.68
1922	...	...	187	$42\frac{1}{2}$	1 $8\frac{1}{4}$	27.99	26.31
1923	...	...	143	$41\frac{3}{4}$	1 $11\frac{1}{2}$	24.03	32.23
1924	...	...	148	$43\frac{1}{2}$	1 $12\frac{1}{2}$	24.21	32.55

TABLE I.—NUMBER OF CATTLE TESTED SINCE 1900.

Breed	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1919	1920	1921	1922	1923	1924
Shorthorns	22	15	31	18	14	17	22	26	26	19	22	26	30	26	20	20	24	30	63	39	34	18
Lincoln Reds	—	—	—	—	—	—	—	7	9	8	8	6	6	5	4	2	4	4	7	7	9	8
British Friesians	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	2	15	10	24	13	23
South Devons	—	—	—	2	2	3	5	—	—	4	7	2	4	2	6	3	—	—	5	5	3	—
Devons	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	2	6	7	5	3
Red Polls	7	2	6	5	4	11	12	11	3	4	4	1	1	—	—	1	11	12	17	23	13	17
Blue Albions	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Welsh Black	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	—
Ayrshires	—	1	1	—	1	3	2	—	4	—	1	—	4	—	—	—	—	—	2	20	16	15
Guernseys	7	8	1	5	3	3	2	2	2	2	2	1	2	6	5	7	16	14	19	15	10	16
Jerseys	29	25	30	20	12	18	13	13	16	22	18	18	7	18	9	10	22	21	24	27	25	32
Kerries	—	—	—	—	—	1	2	2	2	2	—	1	—	5	—	—	4	8	17	13	7	10
Dexters	—	1	2	—	2	—	—	—	3	—	—	—	—	—	—	—	6	5	3	3	8	2
Cross-Breds	2	2	11	8	6	8	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dutch...	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	68	54	82	59	44	64	68	61	65	61	62	55	54	62	45	45	94	111	173	187	143	148

TABLE II.—NUMBER OF CATTLE OF THE VARIOUS BREEDS TESTED SINCE 1895, WITH THEIR AVERAGE PERIOD OF LACTATION, WEIGHT OF BUTTER, BUTTER RATIOS, AND POINTS.

Year.	No.	Breed.	Average No. of Days in Milk.	Average Weight of Butter.	Average Butter Ratio.	Average No. of Points.
				lbs. ozs.	lbs.	
From 1895 to 1915	447	Shorthorns ...	48	1 11 $\frac{1}{2}$	29-19	—
1919	24	" ...	34	1 13 $\frac{1}{2}$	24-35	28-82
1920	30	" ...	34	1 11 $\frac{1}{2}$	25-43	27-91
1921	63	" ...	29	1 8	30-25	24-20
1922	39	" ...	30	1 9	30-75	25-68
1923	34	" ...	57	1 14 $\frac{1}{2}$	26-01	32-59
1924	18	" ...	34 $\frac{3}{4}$	1 15	25-54	31-95
From 1907 to 1915	55	Lincoln Reds	61 $\frac{1}{2}$	1 13 $\frac{1}{2}$	30-31	—
1919	4	" ...	58	1 13 $\frac{3}{4}$	29-20	32-32
1920	4	" ...	59	1 5 $\frac{1}{2}$	31-61	23-90
1921	7	" ...	64	1 13 $\frac{1}{2}$	27-13	31-40
1922	7	" ...	31 $\frac{1}{2}$	2 3 $\frac{3}{4}$	24-82	35-89
1923	9	" ...	58	1 14 $\frac{3}{4}$	26-37	32-73
1924	8	" ...	72 $\frac{3}{4}$	1 12	27-43	32-11
From 1914 to 1915	3	B'th Friesians	71	1 7 $\frac{3}{4}$	41-60	—
1919	2	" ...	28	1 10 $\frac{1}{2}$	36-05	26-50
1920	15	" ...	50	1 13	29-59	31-17
1921	10	" ...	85	2 3	28-26	39-00
1922	24	" ...	57	1 10	35-32	26-86
1923	13	" ...	65	1 11 $\frac{1}{4}$	32-22	31-76
1924	23	" ...	57 $\frac{3}{4}$	1 12	31-87	30-28
From 1909 to 1915	28	South Devons	87	1 9 $\frac{1}{2}$	31-41	—
1921	5	" ...	77	1 14 $\frac{1}{4}$	22-06	34-42
1922	5	" ...	55	1 13	27-04	29-25
1923	3	" ...	36	2 3 $\frac{1}{4}$	21-43	35-76
1919	5	Devons ...	60	1 9 $\frac{1}{2}$	24-47	27-57
1920	2	" ...	25	1 15 $\frac{1}{2}$	19-32	31-55
1921	6	" ...	48	1 15	21-92	32-60
1922	7	" ...	47 $\frac{1}{2}$	1 10 $\frac{3}{4}$	27-00	28-53
1923	5	" ...	41	1 14 $\frac{1}{2}$	23-18	31-29
1924	3	" ...	40 $\frac{3}{4}$	1 10 $\frac{1}{2}$	24-88	26-50
From 1895 to 1915	95	Red Polls ...	70 $\frac{1}{4}$	1 3	30-62	—
1919	11	" ...	49	1 8 $\frac{1}{4}$	30-03	26-02
1920	12	" ...	61	1 5 $\frac{1}{2}$	31-46	23-66
1921	17	" ...	68	1 9 $\frac{1}{2}$	24-73	27-52
1922	23	" ...	59	1 3 $\frac{1}{2}$	34-09	21-75
1923	13	" ...	57	1 9 $\frac{3}{4}$	26-67	28-00
1924	17	" ...	76 $\frac{1}{2}$	1 7 $\frac{1}{2}$	25-79	24-96

TABLE II.—NUMBER OF CATTLE OF THE VARIOUS BREEDS TESTED SINCE 1895, WITH THEIR AVERAGE PERIOD OF LACTATION, WEIGHT OF BUTTER, BUTTER RATIOS, AND POINTS—*Continued.*

Year.	No.	Breed.	Average No. of Days in Milk.	Average Weight of Butter.	Average Butter Ratio.	Average No. of Points.
1924	4	Blue Albions	26 $\frac{1}{2}$	lbs. ozs. 1 15 $\frac{1}{4}$	lbs. 23.34	31.63
1922	4	Welsh Blacks	52	1 13 $\frac{1}{4}$	24.23	30.45
From 1895 to 1915	25	Ayrshires ...	64	1 9 $\frac{1}{2}$	27.42	—
1921	2	" ...	39	2 5	20.15	37.20
1922	20	" ...	32 $\frac{1}{2}$	1 10 $\frac{1}{4}$	31.02	32.18
1923	16	" ...	29	1 14	23.88	30.35
1924	15	" ...	27	2 0 $\frac{1}{4}$	22.65	32.40
From 1895 to 1915	74	Guernseys ...	85 $\frac{1}{2}$	1 8	22.72	—
1919	16	" ...	80	1 7 $\frac{3}{4}$	19.76	27.16
1920	14	" ...	82	1 8 $\frac{1}{4}$	21.22	28.53
1921	19	" ...	82	1 8 $\frac{1}{4}$	20.45	27.47
1922	15	" ...	52	1 8 $\frac{3}{4}$	21.95	27.31
1923	10	" ...	66	1 10 $\frac{3}{4}$	22.89	30.13
1924	16	" ...	84	1 9	22.30	29.08
From 1895 to 1915	375	Jerseys ...	112 $\frac{3}{4}$	1 11	19.19	—
1919	22	" ...	111	1 11 $\frac{1}{4}$	18.76	33.59
1920	21	" ...	106	1 11	18.85	32.74
1921	24	" ...	127	1 9 $\frac{1}{4}$	18.56	32.29
1922	27	" ...	105	1 9 $\frac{1}{2}$	19.82	31.99
1923	25	" ...	135	1 10	18.49	35.31
1924	32	" ...	132	1 15 $\frac{1}{2}$	17.75	38.11
From 1895 to 1915	26	Kerries and Dexters	101	1 2 $\frac{1}{4}$	31.97	—
1919	4	Kerries ...	32	1 2 $\frac{1}{2}$	27.66	18.71
1920	8	" ...	63	1 7	22.81	25.77
1921	17	" ...	76	1 3 $\frac{1}{4}$	23.16	22.43
1922	13	" ...	51	1 1 $\frac{1}{4}$	29.33	19.34
1923	7	" ...	156	1 8 $\frac{3}{4}$	24.60	29.74
1924	10	" ...	82	1 5	26.90	24.42
1919	6	Dexters ...	129	0 15 $\frac{1}{4}$	23.48	23.84
1920	5	" ...	112	0 12 $\frac{1}{2}$	21.78	19.21
1921	3	" ...	153	0 11	24.33	22.30
1922	3	" ...	143	0 13 $\frac{1}{2}$	25.82	21.73
1923	8	" ...	150	0 13 $\frac{3}{4}$	25.20	23.56
1924	2	" ...	78	1 7 $\frac{3}{4}$	23.01	20.35

TABLE III.—AVERAGE YIELD OF BUTTER OF THE DIFFERENT BREEDS AT DIFFERENT PERIODS.

Year.	Breed.	No. of Cows.	Days in Milk, 50.	No. of Cows.	Days in Milk, 100.	No. of Cows.	Days in Milk, 135.	No. of Cows.	Days in Milk, 190.
1895 to			lbs. ozs.		lbs. ozs.		lbs. ozs.		lbs. ozs.
1915	Shorthorns	192	1 12 $\frac{3}{4}$	43	1 9 $\frac{1}{2}$	18	1 8 $\frac{1}{2}$	8	1 1 $\frac{1}{2}$
1919	"	20	1 13 $\frac{1}{2}$	4	1 12 $\frac{1}{4}$	—	—	—	—
1920	"	25	1 12 $\frac{1}{4}$	5	1 6 $\frac{1}{2}$	—	—	—	—
1921	"	56	1 8 $\frac{1}{2}$	5	1 5 $\frac{1}{2}$	—	—	—	—
1922	"	33	1 9	5	1 4 $\frac{3}{4}$	1	1 $\frac{1}{2}$	—	—
1923	"	24	1 15 $\frac{1}{2}$	4	2 0 $\frac{1}{4}$	2	1 13	4	1 5
1924	"	16	2 0	1	1 3 $\frac{1}{4}$	—	—	1	1 11
1907 to	Lincoln	30	1 13 $\frac{1}{4}$	5	1 11	4	1 9 $\frac{5}{8}$	4	1 11 $\frac{1}{8}$
1915	Reds								
1919	"	2	1 14 $\frac{1}{4}$	1	2 3 $\frac{1}{2}$	1	1 6 $\frac{1}{2}$	—	—
1920	"	2	1 8 $\frac{1}{4}$	2	1 2 $\frac{1}{2}$	—	—	—	—
1921	"	4	1 14 $\frac{1}{4}$	1	1 10 $\frac{1}{2}$	2	1 11 $\frac{1}{2}$	—	—
1922	"	7	2 3 $\frac{3}{4}$	—	—	—	—	—	—
1923	"	5	1 12 $\frac{3}{4}$	2	1 10	—	—	2	1 8
1924	"	5	1 12 $\frac{3}{4}$	—	—	2	1 8 $\frac{1}{4}$	1	2 1
1914 to	British	1	1 14	1	1 10	1	1 3 $\frac{1}{2}$	—	—
1915	Friesians								
1919	"	2	1 10 $\frac{1}{2}$	—	—	—	—	—	—
1920	"	10	1 12 $\frac{1}{4}$	3	1 11 $\frac{3}{4}$	2	2 2 $\frac{1}{4}$	—	—
1921	"	3	2 3 $\frac{1}{4}$	2	1 14	3	2 6 $\frac{1}{2}$	2	2 1 $\frac{1}{2}$
1922	"	17	1 11 $\frac{1}{2}$	3	1 12 $\frac{3}{4}$	2	1 0 $\frac{3}{4}$	2	1 0 $\frac{1}{2}$
1923	"	6	1 7 $\frac{1}{4}$	4	2 0 $\frac{3}{4}$	1	2 4 $\frac{1}{2}$	2	1 13 $\frac{3}{4}$
1924	"	14	2 0	7	1 6 $\frac{1}{2}$	—	—	2	1 3 $\frac{3}{4}$
1909 to	South	10	1 15 $\frac{7}{16}$	8	1 6 $\frac{3}{4}$	3	1 13 $\frac{1}{8}$	7	1 6 $\frac{1}{2}$
1915	Devons								
1921	"	1	2 6	3	1 8 $\frac{1}{2}$	—	—	1	2 7
1922	"	2	2 2 $\frac{3}{4}$	3	1 10 $\frac{1}{4}$	—	—	—	—
1923	"	2	2 5 $\frac{1}{2}$	1	1 15	—	—	—	—
1919	Devons	2	1 15 $\frac{1}{2}$	2	1 6 $\frac{1}{4}$	1	1 3	—	—
1920	"	2	1 15 $\frac{1}{2}$	—	—	—	—	—	—
1921	"	5	2 0 $\frac{1}{2}$	—	—	—	—	1	1 6
1922	"	6	1 12 $\frac{3}{4}$	—	—	—	—	1	0 14 $\frac{1}{2}$
1923	"	3	1 13 $\frac{1}{4}$	2	1 15 $\frac{1}{2}$	—	—	—	—
1924	"	3	1 10 $\frac{1}{2}$	—	—	—	—	—	—
1895 to	Red Polls	33	1 3 $\frac{1}{2}$	15	1 5 $\frac{1}{2}$	10	1 0 $\frac{3}{4}$	7	0 14 $\frac{1}{2}$
1915	"	6	1 10	5	1 6 $\frac{1}{4}$	—	—	—	—
1919	"	8	1 7 $\frac{1}{4}$	2	1 2	1	0 15 $\frac{1}{2}$	1	1 2
1920	"	7	1 12 $\frac{1}{2}$	6	1 6 $\frac{3}{4}$	2	1 9 $\frac{1}{2}$	2	1 7 $\frac{1}{2}$
1922	"	13	1 2 $\frac{3}{4}$	7	1 4	2	1 1 $\frac{1}{4}$	1	0 15
1923	"	7	1 8 $\frac{3}{4}$	4	1 6 $\frac{3}{4}$	1	2 4 $\frac{1}{2}$	1	2 2 $\frac{1}{4}$
1924	"	10	1 10	2	1 4	1	1 7 $\frac{3}{4}$	4	1 3 $\frac{3}{4}$

TABLE III.—AVERAGE YIELD OF BUTTER OF THE DIFFERENT BREEDS AT DIFFERENT PERIODS—*Continued.*

Year.	Breed.	No. of Cows.	Days in Milk, 50.	No. of Cows.	Days in Milk, 100.	No. of Cows.	Days in Milk, 135.	No. of Cows.	Days in Milk, 190.
			lbs. ozs.		lbs. ozs.		lbs. ozs.		lbs. ozs.
1924	Blue Albions	3	1 15 $\frac{1}{4}$	1	1 15	—	—	—	—
1922	Welsh Black	2	1 14 $\frac{3}{4}$	2	1 4 $\frac{3}{4}$	—	—	—	—
1908 to									
1915	Ayrshires	2	1 4 $\frac{1}{2}$	3	1 9 $\frac{1}{2}$	—	—	1	0 12
1921	"	2	2 5	—	—	—	—	—	—
1922	"	16	1 7 $\frac{3}{4}$	3	1 2 $\frac{3}{4}$	—	—	1	1 2 $\frac{3}{4}$
1923	"	14	1 15	2	1 8 $\frac{1}{4}$	—	—	—	—
1924	"	15	2 0 $\frac{1}{4}$	—	—	—	—	—	—
1895 to									
1915	Guernseys	17	1 6 $\frac{3}{4}$	13	1 7	9	1 8 $\frac{3}{4}$	12	1 5 $\frac{1}{2}$
1919	"	8	1 8 $\frac{1}{4}$	2	1 11	2	1 2 $\frac{1}{4}$	4	1 7 $\frac{3}{4}$
1920	"	4	1 10	5	1 11 $\frac{1}{4}$	3	1 2 $\frac{1}{4}$	1	1 2
1921	"	7	1 12	5	1 5	2	1 7 $\frac{1}{4}$	5	1 7
1922	"	9	1 8 $\frac{3}{4}$	3	1 12	1	1 5 $\frac{1}{2}$	2	1 7
1923	"	5	1 10 $\frac{1}{2}$	2	1 11 $\frac{1}{4}$	1	2 1 $\frac{1}{2}$	2	1 7 $\frac{3}{4}$
1924	"	8	1 8 $\frac{3}{4}$	2	1 9 $\frac{3}{4}$	3	1 6 $\frac{3}{4}$	3	1 10 $\frac{3}{4}$
1895 to									
1915	Jerseys	64	1 9 $\frac{3}{4}$	70	1 9 $\frac{1}{2}$	65	1 11 $\frac{1}{8}$	98	1 10 $\frac{3}{4}$
1919	"	3	1 15 $\frac{1}{4}$	8	1 7 $\frac{1}{2}$	4	1 12 $\frac{3}{4}$	4	1 11 $\frac{1}{4}$
1920	"	6	1 13 $\frac{1}{4}$	4	1 11 $\frac{3}{4}$	3	1 14	6	1 5 $\frac{1}{2}$
1921	"	1	1 2 $\frac{3}{4}$	8	1 8 $\frac{1}{2}$	4	1 15	8	1 7 $\frac{1}{2}$
1922	"	4	1 12 $\frac{3}{4}$	8	1 11 $\frac{1}{2}$	7	1 8 $\frac{1}{4}$	8	1 6 $\frac{1}{4}$
1923	"	1	1 9 $\frac{1}{4}$	3	1 11 $\frac{1}{4}$	8	1 9 $\frac{1}{4}$	13	1 10 $\frac{3}{4}$
1924	"	2	1 10 $\frac{1}{2}$	6	1 11 $\frac{1}{4}$	7	1 15 $\frac{1}{2}$	17	1 14
1908 to	Kerries & Dexters	21	1 6	10	1 3 $\frac{3}{4}$	7	0 15 $\frac{1}{4}$	13	1 0
1922	Kerries	7	1 2 $\frac{1}{2}$	5	1 1	—	—	1	0 12
1923	"	3	1 12	1	1 8	1	1 10 $\frac{3}{4}$	2	1 2 $\frac{3}{4}$
1924	"	2	1 10 $\frac{1}{4}$	6	1 2 $\frac{3}{4}$	1	1 8 $\frac{3}{4}$	1	1 4
1922	Dexters	1	0 12	2	0 13	—	—	—	—
1923	"	1	0 10	1	0 10	—	—	6	0 15
1924	"	1	0 13 $\frac{1}{2}$	—	—	1	1 2	—	—

TABLE IV.—COMPARISON OF CHURNINGS WITH ANALYSES.

SHORTHORNS.

No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.		No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.	
	lbs.	ozs.	lbs.	ozs.		lbs.	ozs.	lbs.	ozs.
2	2	4	2	2 $\frac{3}{4}$	39	2	0	2	1
3	2	6 $\frac{3}{4}$	2	15 $\frac{3}{4}$	43	2	5 $\frac{1}{2}$	2	8
4	2	10	2	7 $\frac{1}{2}$	48	1	0 $\frac{1}{2}$	1	0 $\frac{1}{2}$
6	2	3	2	7 $\frac{1}{2}$	67	2	8 $\frac{1}{2}$	2	9 $\frac{3}{4}$
13	1	12 $\frac{1}{2}$	1	13 $\frac{3}{4}$	72	2	2 $\frac{1}{2}$	2	1 $\frac{1}{2}$
20	1	11	1	14	73	1	8	1	10 $\frac{3}{4}$
26	1	3 $\frac{1}{2}$	1	2 $\frac{3}{4}$	76	2	3	2	3 $\frac{1}{2}$
35	1	3 $\frac{3}{4}$	1	2 $\frac{3}{4}$	77	2	3	2	0 $\frac{1}{2}$
36	1	4 $\frac{1}{2}$	1	6 $\frac{1}{2}$	85	2	7	2	5
						35	0 $\frac{3}{4}$	36	1 $\frac{3}{4}$

LINCOLN REDS.

106	1	2 $\frac{1}{2}$	1	8 $\frac{3}{4}$	114	1	2	1	2 $\frac{1}{2}$
108	1	7 $\frac{3}{4}$	1	13 $\frac{3}{4}$	116	1	15 $\frac{1}{4}$	1	16 $\frac{1}{2}$
110	1	10	0	12 $\frac{1}{2}$	117	2	1	1	14 $\frac{1}{2}$
113	1	14	1	11 $\frac{1}{2}$	122	2	12 $\frac{1}{2}$	2	6 $\frac{1}{2}$
						14	1	15	0

BRITISH FRIESIANS.

142	1	11 $\frac{1}{2}$	2	7 $\frac{1}{2}$	172	1	15	1	11 $\frac{1}{2}$
145	1	8	1	9 $\frac{1}{2}$	174	2	2 $\frac{1}{2}$	2	3 $\frac{1}{2}$
148	2	3	2	8 $\frac{3}{4}$	176	2	1 $\frac{1}{2}$	2	12 $\frac{3}{4}$
149	1	2 $\frac{1}{2}$	1	10 $\frac{3}{4}$	177	1	9 $\frac{1}{4}$	2	3
153	2	8 $\frac{1}{2}$	2	7	181	1	10 $\frac{1}{2}$	1	14
154	2	2 $\frac{1}{2}$	2	5 $\frac{1}{2}$	182	2	6	1	7 $\frac{3}{4}$
158	1	5 $\frac{1}{2}$	1	5	187	1	9 $\frac{3}{4}$	2	2 $\frac{1}{2}$
159	2	1 $\frac{1}{2}$	2	3 $\frac{1}{2}$	188	1	12	1	9 $\frac{1}{4}$
160	0	14 $\frac{1}{2}$	2	5 $\frac{1}{2}$	190	0	14	1	13 $\frac{3}{4}$
164	2	12 $\frac{1}{2}$	2	13 $\frac{3}{4}$	194	0	12 $\frac{3}{4}$	1	1 $\frac{1}{2}$
165	2	0	2	3 $\frac{1}{2}$	196	1	7	1	10 $\frac{3}{4}$
170	1	12 $\frac{1}{2}$	1	13 $\frac{3}{4}$					
						40	6 $\frac{3}{4}$	45	11

DEVONS.

202	1	12	2	2	207	1	15 $\frac{1}{2}$	1	15 $\frac{1}{4}$
203	1	4	1	10 $\frac{3}{4}$					
						4	15 $\frac{1}{2}$	5	12

TABLE IV.—COMPARISON OF CHURNINGS WITH ANALYSES—*Continued.*

RED POLL.

No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.		No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.	
	lbs.	ozs.	lbs.	ozs.		lbs.	ozs.	lbs.	ozs.
211	1	9	1	13 $\frac{1}{4}$	226	1	9 $\frac{1}{2}$	1	11 $\frac{1}{2}$
212	1	11 $\frac{1}{4}$	1	13 $\frac{3}{4}$	229	1	7 $\frac{3}{4}$	1	3 $\frac{1}{2}$
213	2	5 $\frac{1}{2}$	2	5 $\frac{3}{4}$	232	0	11	1	9 $\frac{1}{4}$
214	1	11 $\frac{1}{4}$	1	3 $\frac{1}{4}$	233	1	9 $\frac{3}{4}$	1	14 $\frac{3}{4}$
215	2	4 $\frac{3}{4}$	2	0 $\frac{3}{4}$	240	1	10 $\frac{1}{4}$	1	14
218	1	9 $\frac{3}{4}$	2	8 $\frac{3}{4}$	249	1	10 $\frac{1}{2}$	1	12 $\frac{1}{2}$
220	1	0 $\frac{1}{2}$	1	1 $\frac{3}{4}$	250	0	14	0	15 $\frac{1}{4}$
223	1	0 $\frac{3}{4}$	1	5 $\frac{3}{4}$	251	1	7 $\frac{1}{2}$	1	8
225	1	8 $\frac{3}{4}$	1	8 $\frac{1}{4}$					
						25	3 $\frac{1}{4}$	28	5 $\frac{1}{4}$

BLUE ALBIONS.

254	2	1	2	6 $\frac{3}{4}$	256	2	3 $\frac{1}{2}$	2	10 $\frac{1}{4}$
255	1	9 $\frac{3}{4}$	1	12	262	1	15	2	2 $\frac{3}{4}$
						7	13 $\frac{1}{4}$	8	15 $\frac{3}{4}$

AYRSHIRES.

267	2	4 $\frac{1}{2}$	2	4 $\frac{3}{4}$	278	1	11 $\frac{1}{2}$	1	12 $\frac{1}{2}$
268	3	3	2	15 $\frac{3}{4}$	279	2	0	2	2
269	2	7 $\frac{3}{4}$	3	3 $\frac{1}{2}$	283	1	15 $\frac{1}{2}$	2	2
271	2	5 $\frac{1}{4}$	2	9 $\frac{1}{2}$	284	1	5 $\frac{1}{2}$	2	1 $\frac{1}{4}$
272	1	10 $\frac{1}{4}$	2	3 $\frac{1}{4}$	285	1	14 $\frac{1}{2}$	2	2 $\frac{1}{4}$
273	2	11 $\frac{1}{4}$	2	14 $\frac{1}{2}$	287	1	8 $\frac{3}{4}$	2	0 $\frac{3}{4}$
275	1	8 $\frac{1}{4}$	2	6 $\frac{3}{4}$	294	1	7 $\frac{1}{4}$	1	8 $\frac{3}{4}$
277	2	4 $\frac{1}{2}$	2	10 $\frac{3}{4}$					
						30	5 $\frac{1}{4}$	35	1 $\frac{1}{4}$

GUERNSEYS.

299	1	7 $\frac{1}{2}$	1	7 $\frac{3}{4}$	315	1	12	1	13 $\frac{3}{4}$
302	2	4 $\frac{1}{2}$	2	5 $\frac{1}{4}$	316	1	9 $\frac{1}{2}$	1	10 $\frac{3}{4}$
305	1	7 $\frac{3}{4}$	1	6 $\frac{3}{4}$	317	1	14 $\frac{1}{2}$	1	14
306	1	11	1	12 $\frac{1}{4}$	318	1	8 $\frac{1}{2}$	1	9 $\frac{1}{4}$
307	1	4	1	4 $\frac{3}{4}$	322	1	4 $\frac{1}{2}$	1	3 $\frac{3}{4}$
308	1	12	1	10 $\frac{3}{4}$	323	1	5	1	5
309	1	12 $\frac{3}{4}$	1	11	324	1	12	1	10 $\frac{3}{4}$
311	0	11 $\frac{3}{4}$	1	3 $\frac{1}{2}$	325	1	7	1	9 $\frac{3}{4}$
						25	0	25	10 $\frac{1}{2}$

TABLE IV.—COMPARISON OF CHURNINGS WITH ANALYSES—*Continued.*

JERSEYS.

No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.		No. in Catalogue.	Weight of Butter Churned.		Total Fat by Analyses.	
	lbs.	ozs.	lbs.	ozs.		lbs.	ozs.	lbs.	ozs.
328	1	8 $\frac{1}{2}$	1	9 $\frac{1}{2}$	358	1	13 $\frac{3}{4}$	1	9 $\frac{1}{4}$
333	2	6 $\frac{1}{2}$	2	2 $\frac{3}{4}$	359	1	11	1	9
335	1	11 $\frac{1}{2}$	1	10 $\frac{3}{4}$	360	1	3 $\frac{3}{4}$	1	3
337	1	14	2	4 $\frac{1}{2}$	361	1	7 $\frac{1}{4}$	1	6 $\frac{3}{4}$
342	2	0 $\frac{3}{4}$	1	14 $\frac{3}{4}$	362	1	5 $\frac{3}{4}$	1	5 $\frac{3}{4}$
343	1	8 $\frac{1}{2}$	1	8 $\frac{1}{2}$	363	1	8	1	11 $\frac{1}{2}$
344	2	2	1	13 $\frac{3}{4}$	370	2	4	2	2
345	1	13 $\frac{1}{2}$	1	11 $\frac{1}{2}$	371	2	9 $\frac{1}{4}$	2	6
346	1	10 $\frac{1}{2}$	1	10 $\frac{3}{4}$	375	1	15 $\frac{3}{4}$	2	4 $\frac{1}{4}$
348	1	11 $\frac{1}{2}$	1	10	378	2	0 $\frac{1}{4}$	2	6 $\frac{1}{4}$
349	1	11 $\frac{1}{2}$	1	12	379	1	13 $\frac{3}{4}$	1	15 $\frac{3}{4}$
350	2	8 $\frac{1}{4}$	1	10 $\frac{1}{4}$	387	1	11	1	11 $\frac{1}{4}$
351	2	2	2	0 $\frac{1}{2}$	391	1	9 $\frac{3}{4}$	1	9 $\frac{1}{4}$
352	2	7	2	7 $\frac{1}{2}$	392	1	11 $\frac{3}{4}$	1	11 $\frac{3}{4}$
354	1	14 $\frac{1}{4}$	1	15 $\frac{1}{2}$	398	1	9 $\frac{1}{2}$	1	7
356	2	3 $\frac{1}{2}$	2	0 $\frac{1}{4}$	402	1	8 $\frac{1}{2}$	1	7 $\frac{1}{4}$
						59	4 $\frac{1}{2}$	57	12 $\frac{3}{4}$

KERRIES.

407	2	2 $\frac{1}{2}$	1	15	413	1	1	1	3 $\frac{1}{4}$
408	1	11 $\frac{1}{4}$	1	15	414	0	8 $\frac{1}{2}$	0	10 $\frac{1}{4}$
410	1	10 $\frac{3}{4}$	1	12 $\frac{3}{4}$	416	1	10	1	8 $\frac{1}{4}$
411	1	4	1	5 $\frac{1}{2}$	423	1	0 $\frac{3}{4}$	0	15 $\frac{1}{4}$
412	1	8 $\frac{1}{2}$	1	10 $\frac{1}{2}$	424	0	9	0	11 $\frac{3}{4}$
						13	2 $\frac{1}{4}$	13	12

DEXTERS.

430	1	2	1	7 $\frac{3}{4}$	433	0	13 $\frac{1}{2}$	0	10 $\frac{1}{4}$
						1	15 $\frac{1}{2}$	2	2

TABLE V.—AVERAGE DIFFERENCES BETWEEN CHURNINGS AND
CHEMICAL ANALYSES FROM 1898.

Year	Breed	Churn	Analyses
		Lbs. Butter	Lbs. Fat
1898	Shorthorns	38.92	36.82
1899	"	34.34	32.46
1900	"	35.55	37.87
1901	"	29.05	27.80
1902	"	53.48	55.91
1903	"	30.72	35.92
1904	"	22.98	26.59
1905	"	30.89	30.58
1906	"	31.38	33.59
1907	"	45.14	47.79
1908	"	43.74	49.78
1909	"	35.06	35.91
1910	"	41.62	44.75
1911	"	47.79	48.00
1912	"	61.10	63.85
1913	"	43.01	48.69
1914	"	36.87	39.14
1915	"	32.50	40.15
1919	"	43.86	42.40
1920	"	51.25	52.57
1921	"	94.84	112.69
1922	"	61.26	71.69
1923	"	65.15	71.94
1924	"	35.02	36.15
1907	Lincolnshire Red Shorthorns ...	12.94	12.31
1908	" " " " ...	15.79	15.56
1909	" " " " ...	14.06	13.48
1910	" " " " ...	13.37	13.62
1911	" " " " ...	10.16	10.00
1912	" " " " ...	11.47	12.00
1913	" " " " ...	9.12	8.65
1914	" " " " ...	6.44	6.47
1915	" " " " ...	3.29	3.16
1919	" " " " ...	7.47	7.15
1920	" " " " ...	5.37	5.81
1921	" " " " ...	12.77	13.01
1922	" " " " ...	15.62	14.96
1923	" " " " ...	16.90	19.72
1924	" " " " ...	14.06	12.98
1898	Jerseys	29.15	27.26
1899	"	23.61	22.54
1900	"	39.75	39.32
1901	"	33.19	31.82
1902	"	43.61	41.03
1903	"	27.04	26.41
1904	"	22.22	22.06
1905	"	24.53	22.44
1906	"	19.56	18.71
1907	"	22.64	—
1908	"	22.25	—
1909	"	37.65	35.89
1910	"	*30.37	30.18

* Excluding Nos. 142 and 146.

TABLE V.—AVERAGE DIFFERENCES BETWEEN CHURNINGS AND CHEMICAL ANALYSES FROM 1898—*Continued.*

Year	Breed	Churn	Analyses
		Lbs. Butter	Lbs. Fat
1911	Jerseys	27.62	26.18
1912	"	14.39	13.39
1913	"	29.54	*20.90
1914	"	17.44	16.14
1915	"	16.16	14.67
1919	"	37.44	35.18
1920	"	25.06	24.55
1921	"	29.75	28.50
1922	"	43.22	42.05
1923	"	41.38	41.40
1924	"	59.18	58.87
1898	Guernseys	18.07	8.25
1899	"	15.90	5.53
1900	"	0.84	11.10
1901	"	2.46	11.59
1902	"	1.23	1.34
1903	"	5.34	6.47
1904	"	4.89	4.94
1905	"	3.42	3.42
1906	"	2.41	1.82
1907	"	3.54	3.22
1908	"	3.69	3.52
1909	"	3.20	3.52
1910	"	2.44	2.81
1911	"	0.87	1.59
1912	"	2.31	2.96
1913	"	†8.48	7.59
1914	"	†4.96	5.28
1915	"	10.31	11.08
1919	"	23.72	23.66
1920	"	21.23	21.62
1921	"	28.94	28.87
1922	"	22.46	23.14
1923	"	16.80	16.78
1924	"	25.98	25.60
1898	Red Polls	5.04	5.56
1899	"	8.48	8.33
1900	"	8.98	9.81
1901	"	3.07	2.88
1902	"	8.36	8.00
1903	"	5.01	6.95
1904	"	5.39	6.00
1905	"	13.42	14.53
1906	"	11.39	14.50
1907	"	12.53	16.08
1908	"	3.21	4.06
1909	"	5.09	5.71
1910	"	5.12	6.25
1911	"	0.94	1.08
1912	"	1.00	1.31
1919	"	16.71	18.83

* Does not include the fat of Jersey Heifers competing in the Tests.

† Does not include the fat of Guernsey Heifers competing in the Tests.

TABLE V.—AVERAGE DIFFERENCES BETWEEN CHURNINGS AND
CHEMICAL ANALYSES FROM 1898—*Continued.*

Year	Breed					Churn	Analyses
						Lbs. Butter	Lbs. Fat
1920	Red Polls	...	...	...	...	15.98	18.89
1921		...	...	...	...	27.06	29.98
1922		...	...	...	...	28.33	35.61
1923		...	...	...	...	21.07	24.15
1924		...	...	...	...	25.12	28.36
1909	South Devons	...	...	...	...	6.89	7.03
1910		...	...	...	...	12.03	13.06
1911		...	...	...	...	2.64	3.25
1912		...	...	...	...	7.92	8.39
1913		...	...	...	...	3.01	3.75
1914	Devons	...	...	...	...	10.50	11.00
1915		...	...	...	...	3.22	4.16
1921		...	...	...	...	9.46	10.50
1922		...	...	...	...	9.25	9.71
1923		...	...	...	...	6.62	7.13
1919	Ayrshires	...	...	...	...	7.92	8.10
1920		...	...	...	...	3.94	3.59
1921		...	...	...	...	11.58	12.73
1922		...	...	...	...	11.60	12.72
1923		...	...	...	...	9.51	9.88
1924	Kerries	...	...	...	...	4.97	5.76
1910		...	...	...	...	1.94	1.75
1912		...	...	...	...	5.37	5.89
1921		...	...	...	...	4.62	4.69
1922		...	...	...	...	27.85	31.52
1923	Kerries and Dexters	...	...	...	...	30.19	32.95
1924		...	...	...	...	30.52	35.15
1907		...	...	...	...	3.40	3.19
1908		...	...	...	...	6.89	7.09
1909		...	...	...	...	2.75	2.64
1911	Kerries	...	...	...	...	1.21	0.96
1913		...	...	...	...	5.94	6.10
1919		...	...	...	...	4.66	4.64
1920		...	...	...	...	11.50	11.48
1921		...	...	...	...	18.78	21.96
1922	Dexters	...	...	...	...	14.14	13.57
1923		...	...	...	...	10.81	*9.75
1924		...	...	...	...	13.11	13.75
1919		...	...	...	...	5.77	5.58
1920		...	...	...	...	3.96	3.84
1921	British Friesians	...	...	...	...	2.06	2.50
1922		...	...	...	...	2.52	2.77
1923		...	...	...	...	6.90	6.76
1924		...	...	...	...	1.97	2.11
1914		...	...	...	...	1.20	1.69
1915	Welsh Black...	...	...	...	...	3.50	4.00
1919		...	...	...	...	3.31	3.33
1920		...	...	...	...	27.10	29.06
1921		...	...	...	...	21.81	25.18
1922		...	...	...	...	38.87	44.60
1923	Blue Albions	...	...	...	...	22.92	27.32
1924		...	...	...	...	40.37	46.74
1922		...	...	...	...	7.30	6.70
1924		...	...	...	...	7.76	8.92

* Does not include the fat of No. 466.

BUTTER TESTS—SHORTHORNS.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards		
							Morn.		Total			Colour	Quality						
							lbs ozs	lbs ozs	lbs ozs										
2	Sir Clifford Cory, Bart.	Llantarnam Barrington Beauty	1276	Feb. 2, 1919	Sept. 21	29	22	5	20	6	42	11	2	4	18-9	Pale	Good	36-00	H.C.
3	Major S. P. Yates	Bright Darling ...	1563	Dec. 22, 1916	Sept. 27	23	33	11	33	00	66	11	2	6½	27-5	Fair	Fair	38-75	H.C.
4	Major S. P. Yates	Clara's Beauty ...	1437	Mar. 4, 1918	Sept. 13	37	35	14	25	10	61	8	2	10	23-7	Fair	Fair	42-00	3rd Prize, & George Barham Nelson Chaff. Cup
6	D. Aldridge	Merry Maid 5th...	1426	May 3, 1917	Sept. 26	24	35	14	21	6	57	4	2	3	26-1	Pale	Soft	35-00	H.C.
13	G. Twentyman	Duchess ...	1433	April 12, 1917	Sept. 15	35	31	10	25	11	57	5	1	12½	32-3	Pale	Soft	28-50	H.C.
20	J. G. Peel	Watercrock Rose	1186	Jan. 21, 1917	April 29	17	4	29	2	22	11	5	1	13	30-6	Pale	Bad	27-00	12-00
26	Sir Clifford Cory, Bart.	Llantarnam Dizzy 2nd	1303	May 5, 1920	Sept. 21	29	14	5	13	2	27	7	1	3½	22-8	Pale	Fair	19-25	19-25
35	Capt. A. S. Wills	Thornby Dairymaid	1281	Oct. 2, 1920	Aug. 30	51	18	3	16	14	35	1	1	3½	28-6	Fair	Fair	19-75	1-10
36	Capt. A. S. Wills	Thornby Lady Windsor	1234	Nov. 25, 1920	Sept. 8	42	20	10	21	2	41	1	2	1	30-6	Fair	Fair	20-50	0-20
39	R. Tustian	Primula 173rd ...	1409	Nov. 6, 1919	Sept. 21	29	25	14	21	5	47	3	2	0	23-6	Fair	Good	32-00	H.C.
43	E. Ezra	Thurnham Ringlet 14th	1294	Dec. 28, 1919	Oct. 2	18	29	2	23	11	52	13	2	5½	22-6	Fair	Good	37-50	H.C.
48	Major S. P. Yates	White Rose	1298	Feb. 1, 1922	Oct. 4	16	14	3	13	10	27	13	1	0½	27-0	Good	Good	16-50	16-50

BUTTER TESTS—SHORTHORNS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards
							Morn.	Even.	Total		Colour	Quality				
			lbs.				lbs ozs	lbs ozs	lbs ozs							
67	A. B. Croxon	Spot	... 1603	1914	1924.	Sept. 27	23 35	0 31	2 66	2 2	8½	25.2	Good	Fair	40.50	4th Prize
72	G. Crabtree	Baines	... 1233	1919	Sept. 30	30 22	5 15	6 37	11 2	2½	17.5	Fair	Good	34.50	—	H.C.
73	G. Crabtree	Molly	... 1322	1919	Sept. 30	20 20	5 17	11 38	0 1	8	25.3	Good	Fair	24.00	—	H.C.
76	W. H. Nelson	Lady Wilson 3rd	1574	1918	Oct. 6	14 28	3 28	13 57	0 2	3	26.1	Good	Good	35.00	—	H.C.
77	W. H. Nelson	Sally	... 1367	1919	Sept. 30	20 24	0 23	2 47	2 2	3	21.3	Fair	Good	35.00	—	H.C.
85	F. Chapman	Dorothy	... 1386	—	Oct. 6	14 25	10 23	5 48	15 2	7	20.0	Good	Fair	39.00	—	H.C.
86	N. Hardman	Model	... 1364	Disqualified												
87	N. Hardman	Princess	... 1286													
88	N. Hardman	Cowin	... 1326													
106	Sir A. G. Weigall, K.C.M.G.	Sibsey Rose	... 1374	Sept. 4, 1913	June 7	135 21	3 22	3 43	6 1	2½	37.7	Good	Good	18.50	9.50	28.00
108	Sir A. G. Weigall, K.C.M.G.	Langford Damsel 1444	15th	Nov. 14, 1919	Oct. 6	14 22	0 18	2 40	2 1	7¾	28.6	Good	Good	23.75	—	23.75
110	S. Blundell	Bendish Cherry	1446	June 1, 1915	Sept. 3	47 26	3 21	8 47	11 1	10	29.4	Fair	Good	26.0	0.70	26.70

2nd

BUTTER TESTS—SHORTHORNS—Continued.

No in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield				Butter Yield	Ratio, viz. lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards.		
							Morn.	Even.	Total	Colour			Quality							
1113	B. G. Bowser	Scotthern Mystic...	lbs. 1409	May 26, 1918	1924. June 14	128	30	13	22	2 52	15	1	14	28.2	Good	Good	30.00	8.80	38.80	H.C.
1114	B. G. Bowser	Scotthern Tulip ...	1511	May 14, 1918	Sept. 26	24	22	10	19	11	42	5	2	37.7	Good	Good	18.00	—	18.00	
1116	J. Evens & Son	Burton Ruby 23rd	1534	April 29, 1916	Sept. 1	49	29	14	25	0 54	14	1	15 1/4	28.1	Good	Good	31.25	0.90	32.15	
1117	J. Evens & Son	Burton Ruby Spot 14th	1370	Sept. 7, 1915	May 11	162	28	8	21	13	50	5	2	24.6	Pale	Good	33.00	12.00	45.00	1st Prize
122	S. Reading	Langford Queen 7th	1251	Jan. 25, 1918	Sept. 26	24	26	14	27	5 54	3	2	12 1/2	19.5	Good	Good	44.50	—	44.50	2nd Prize

BUTTER TESTS—SHORTHORNS—Continued.

CHURNING—TIME AND TEMPERATURE		Name of Animal					
No. in Catalogue	Time		Churning finished	Duration of Churning	Daily	Temperature	
						Cream and Churn	Buttermilk, when churning finished
		Churning began	Minutes	Degrees	Degrees	Degrees	
2	Llantarnam Barrington Beauty...	9 5 a.m.	9 40 a.m.	35	56	52	54
3	Bright Darling	9 10 "	9 39 "	29	56	52	55
4	Clara's Beauty	9 11 "	9 29 "	18	56	52	55
6	Merry Maid	9 24 "	9 36 "	12	56	52	53
13	Duchess	9 23 "	10 6 "	33	56	52	54
20	Watercreek Rose	9 6 "	9 40 "	34	56	52	53
26	Llantarnam Dizzy 2nd	9 14 "	9 50 "	36	56	52	56
35	Thornby Dairymaid	9 11 "	9 50 "	39	56	52	53
36	Thornby Lady Windsora	9 20 "	10 25 "	65	56	52	58
39	Primula 173rd	9 16 "	9 32 "	16	56	52	51
43	Thurnham Ringlet 14th	9 50 "	10 5 "	15	56	52	56
48	White Rose	9 17 "	9 45 "	28	56	52	52
67	Spot	9 15 "	9 50 "	35	56	52	56
72	Baines	9 51 "	10 10 "	19	56	52	53
73	Molly	10 2 "	10 18 "	16	56	52	54
76	Lady Wilson 3rd	6 0 "	6 30 "	30	60	52	57
77	Sally	9 36 "	10 5 "	29	56	52	56
85	Dorothy	9 58 "	10 20 "	22	56	52	54
86	Model						
87	Princess						
88	Cowin						
106	Sibsey Rose	10 24 "	10 58 "	34	58	52	57

Disqualified.

BUTTER TESTS—SHORTHORNS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE			
		Time		Temperature	
		Churning began	Churning finished	Dairy	Buttermilk, when churning finished
			Minutes	Degrees	Degrees
108	Langford Damsel 15th	10 45 a.m.	11 15 a.m.	60	56
110	Bendish Cherry 2nd	10 38 "	10 46 "	59	56
113	Seotherm Mystic	10 46 "	11 16 "	60	57
114	Seotherm Tulip	10 51 "	11 7 "	60	55
116	Burton Ruby 23rd	10 48 "	11 15 "	60	56
117	Burton Ruby Spot 14th	10 51 "	11 27 "	60	55
122	Langford Queen 7th	12 7 p.m.	12 26 p.m.	60	54

BUTTER TESTS—BRITISH FRIESIANS.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards
							Morn.	Even.	Total			Colour	Quality				
			lbs.				lbs	ozs	lbs	ozs	lbs	ozs					
142	Lord Rayleigh ...	Terling Torch 13th	1430	Nov. 25, 1917	Sept. 13	1924.	37	36	326	10	62	131	11½	Good	27.75	—	27.75
145	Lt. Col. J. F. N. Baxendale	Froxfield Cowslip	1567	Sept. 23, 1918	Aug. 17	64	30	13	27	5	58	21	8	Good	24.00	2.40	26.40
148	A. & J. Brown ...	Hedges	1475	May 2, 1918	Sept. 23	27	35	14	28	5	64	32	3	Good	35.00	—	35.00 H.C.
149	W. B. Robinson...	Banattatwo Felhampton	1460	Nov. 20, 1918	May 22	151	27	3	23	5	50	81	2½	Good	18.25	11.10	29.35
153	G. Holt-Thomas...	Ariadne Blackmore Ena	1316	April 4, 1915	Sept. 2	48	34	11	27	8	62	32	8½	Good	40.50	0.80	41.30 2nd Prize
154	G. Holt-Thomas	Beccles Peggoty 2nd	1608	Oct. 2, 1916	Sept. 3	47	45	6	38	10	84	02	2½	Fair	34.25	0.70	34.95 H.C.
158	Capt. J. Christie, M.C.	Brooklands	1425	June 22, 1917	May 13	160	26	0	20	3	46	31	5½	Fair	21.25	12.00	33.25
159	W. & R. Wallace	Hannah Hatfield Daisy ...	1378	Sept. 25, 1916	Oct. 2	18	32	3	27	10	59	13	2 ½	Good	33.50	—	33.50
160	W. & R. Wallace	Hadham Duchess	1395	Aug. 18, 1918	Sept. 15	35	33	6	33	14	67	40	14½	Good	14.50	—	14.50
164	Lord Rayleigh ...	Terling Skylark 14th	1494	Dec. 14, 1919	Sept. 18	32	39	0	30	6	69	62	12½	Pale	44.50	—	44.50 1st Prize
165	G. Holt-Thomas...	Northdean Myrtle 14th	1582	June 15, 1920	July 22	90	27	11	25	8	53	32	0	Good	32.00	5.00	37.00 4th Prize
170	A. & J. Brown ...	Hedges Albert's Queen	1468	Oct. 23, 1919	Sept. 18	32	25	2	21	0	46	21	12½	Good	28.50	—	28.50
172	A. & J. Brown ...	Garter Hedges Bles Fair 1420 Princess	1420	Jan. 25, 1920	Sept. 27	23	25	10	20	14	46	81	15	Fair	31.00	—	31.00 H.C.

BUTTER TESTS—BRITISH FRIESIANS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards								
							Morn.	Even.	Total			Colour	Quality												
			lbs.				lbs	ozs	lbs	ozs	lbs	ozs													
174	Friend Sykes ...	Kingswood Ceres ... Bridesmaid	1494	Oct. 14, 1919	1924, Sept. 21	29	28	14	24	0	52	14	2	24	5	34	50	Good	34	50	—	34	50	H.C.	
176	W. & R. Wallace	Satum May 2nd...	1388	Sept. 1, 1919	Oct. 6	14	38	13	33	10	72	7	2	34	5	33	75	Good	33	75	—	33	75		
177	W. & R. Wallace	Knebworth Ynte's ... Margold	—	Sept. 5, 1919	Sept. 19	31	34	10	36	13	71	7	1	45	7	25	25	Good	25	25	—	25	25		
181	E. Furness ...	Hamels Aileen ...	1248	Oct. 19, 1919	Aug. 23	58	27	10	25	6	53	0	1	32	2	26	50	Good	26	50	1	80	28	30	
182	E. Furness ...	Hamels Beryl ...	1254	Oct. 18, 1919	Sept. 3	47	32	3	24	11	56	14	2	23	9	38	00	Good	38	00	0	70	38	70	3rd Prize
187	F. Griffiths ...	Pentremorgan Iona	1300	Dec. 10, 1920	July 14	98	27	0	21	10	48	10	1	30	4	25	75	Soft	25	75	5	80	31	55	H.C.
188	Lt.-Col. J. F. N. Baxendale	Froxfield Ruby ...	1328	Jan. 3, 1922	Sept. 17	33	24	0	22	2	46	2	1	26	4	18	00	Good	18	00	—	18	00		
190	A. & J. Brown ...	Hedges Dairy Girl	1158	Feb. 28, 1922	Aug. 12	69	17	6	12	13	30	3	0	34	7	14	00	Good	14	00	2	90	16	90	
194	Seton de Winton	Upminster Bullis	1130	Oct. 12, 1921	July 22	90	21	13	18	3	40	0	0	50	6	12	75	Good	12	75	5	00	17	75	
196	E. Furness ...	Hamels Delight...	1434	Oct. 11, 1921	July 13	99	27	0	20	6	47	6	1	33	7	23	00	Soft	23	00	5	90	28	90	

BUTTER TESTS—BRITISH FRIESIANS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Degrees
142	Terling Torch 13th	11 0 a.m.	11 45 a.m.	45	60	56
145	Froxfield Cowslip ...	11 2 "	11 45 "	43	60	57
148	Hedges Banattawo ...	11 24 "	11 52 "	28	60	56
149	Felhampton Ariadne	11 11 "	11 43 "	32	60	58
153	Blackmore Ena 2nd	11 27 "	11 50 "	23	60	56
154	Beebles Peggoty ...	11 22 "	11 52 "	30	60	56
158	Brooklands Hannah	11 15 "	11 55 "	40	60	56
159	Hatfield Daisy	11 25 "	12 20 p.m.	55	60	58
160	Hadham Duchess ...	11 35 "	1 35 "	120	60	60
164	Terling Skylark 14th	11 29 "	12 20 "	51	60	58
165	Northdean Myrtle Queen	11 41 "	12 10 "	49	60	56
170	Hedges Albert's Garter	11 55 "	12 43 "	48	60	56
172	Hedges Bles Fair Princess	11 57 "	12 17 "	20	60	56
174	Kingswood Ceves Bridesmaid	12 12 p.m.	12 32 "	20	60	55
176	Saturn May 2nd ...	12 7 "	1 34 "	101	60	60
177	Knebworth Ynte's Marigold	12 24 "	1 10 "	46	60	56
181	Hamels Aileen ...	12 33 "	12 55 "	22	60	56
182	Hamels Beryl ...	12 0 "	12 25 "	25	60	56
187	Pentremorgan Iona	12 16 "	12 52 "	36	60	54
188	Froxfield Ruby ...	6 0 "	6 25 "	25	60	56
190	Hedges Dairy Girl	12 15 "	12 50 "	45	60	56
194	Upminster Bullis ...	12 33 "	3 15 "	102	60	52
196	Hamels Delight ...	12 30 "	1 5 "	35	60	56

BUTTER TESTS—RED POLLS.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter.		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards	
							lbs ozs lbs ozs lbs ozs lbs ozs					Colour	Quality					
							Morn.	Even.	Total									
211	Major J. A. Morrison, D.S.O.	Sudborne Comfit	lbs. 1401	Aug. 10, 1916	1924. April 9	9194	21	8 16	13 38	5 1	9	24.7	Good	Soft	25.00	12.00	37.00	3rd Prize
212	Major J. A. Morrison, D.S.O.	Basilton Rosalind	1154	Feb. 20, 1918	Sept. 14	3633	628	3 61	9 11	11 1	11	30.3	Good	Soft	27.25	—	27.25	
213	W. L. Horbury	Sudborne Mina	1246	Nov. 18, 1917	Sept. 30	2024	1420	14 45	12 2	5 1	5 1	19.6	V. Good	V. Good	37.50	—	37.50	1st Prize
214	P. H. Beale	Dallinghoo Pretty	1176	April 1, 1916	May 1	17223	1117	14 41	9 1	11 1	11	38.8	Pale	Soft	17.25	12.00	29.25	
215	M. C. Pilkington	Harefield Apricot	1306	Aug. 12, 1915	Sept. 24	2626	1020	2 46	12 2	4 3	4 3	20.4	Good	Fair	36.75	—	36.75	H.C.
218	Mrs. R. M. Foot	Harefield Dawn	1084	Nov. 8, 1917	Sept. 11	3929	327	3 56	6 1	9 3	9 3	35.2	Pale	Good	25.75	—	25.75	
220	W. R. Glazebrook, junr.	Davy 367th	1024	April 10, 1918	Sept. 12	3814	513	6 27	11 1	0 1	0 1	26.9	Good	Good	16.50	—	16.50	
223	Capt. A. Richardson	Seven Springs	973	Feb. 25, 1921	Sept. 13	3723	1420	8 44	6 1	0 3	0 3	42.6	Pale	Good	16.75	—	16.75	
225	Mrs. R. M. Foot	White Hill Flight	1182	Mar. 5, 1921	Oct. 3	1718	1116	0 34	11 1	8 3	8 3	22.5	Pale	V. Good	24.75	—	24.75	
226	Mrs. R. M. Foot	Burley Daisy	1149	Dec. 16, 1920	Sept. 29	2121	521	3 42	8 1	9 1	9 1	26.7	Pale	V. Good	25.5	—	25.50	
229	W. R. Glazebrook, junr.	Ferrymore Linnet	1127	Dec. 30, 1919	June 29	11326	825	11 52	3 1	7 3	7 3	35.1	Good	Good	23.75	7.30	31.05	H.C.
232	J. B. Dimmock	Thornham Roseleaf H 21st	1213	June 29, 1920	Mar. 21	21318	215	10 33	12 0	1 1	1 1	48.9	V. Pale	V. Soft	11.00	12.00	23.00	

BUTTER TESTS—RED POLLS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Born	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards				
							Morn.	Even.	Total			Colour	Quality								
233	M. C. Pilkington	Hutton Apricot...	lbs. 1326	Sept. 11, 1919	1924 May 17	156	23	0	16	11	39	11	1	9 $\frac{3}{4}$	24.8	Fair	Fair	25.75	11.60	37.35	2nd Prize
240	J. B. Dimmock ...	Shotford Lady Mary 5th	1124	Feb. 22, 1922	Sept. 6	44	22	5	18	6	40	11	1	10 $\frac{1}{4}$	25.0	Pale	Fair	26.25	0.40	26.65	
249	Capt. A. Richardson	Seven Springs	1086	Dec. 20, 1921	Aug. 30	51	19	0	15	14	34	14	1	10 $\frac{1}{4}$	21.3	Pale	Good	26.25	1.10	27.35	
250	Mrs. R. M. Foot...	White Hill Lily ...	1080	Nov. 25, 1921	July 27	85	10	11	9	3	19	40	14	22.9	22.9	Pale	Good	14.00	4.50	18.50	
251	Mrs. R. M. Foot...	White Hill Brundish	994	Dec. 14, 1921	Sept. 7	43	16	5	13	2	29	71	7 $\frac{1}{4}$	20.5	20.5	Pale	Good	23.25	0.3	23.55	

BUTTER TESTS—RED POLLS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Degrees
211	Sudborne Comfit ...	2 28 p.m.	2 53 p.m.	25	60	56
212	Basildon Rosalind ...	2 25 "	2 50 "	25	60	54
213	Sudborne Mina ...	2 26 "	2 43 "	17	60	56
214	Dallinghoo Pretty ...	2 30 "	3 34 "	64	60	58
215	Harefield Apricot 1st ...	2 36 "	3 7 "	31	60	56
218	Harefield Dawn ...	2 31 "	3 10 "	39	60	54
220	Davy 367th ...	2 42 "	3 15 "	27	60	58
223	Seven Spring's Quest ...	2 46 "	3 55 "	69	60	60
225	White Hill Flight ...	3 0 "	4 52 "	112	60	70
226	Burley Daisy ...	2 33 "	2 53 "	20	60	54
229	Ferrymore Linnet ...	3 3 "	3 35 "	32	60	54
232	Thornham Roseleaf H 21st ...	3 3 "	3 40 "	37	60	56
233	Hutton Apricot ...	3 21 "	3 57 "	36	60	59
240	Shotford Lady Mary 5th ...	2 32 "	2 58 "	26	60	56
249	Seven Springs Lucy ...	2 55 "	4 0 "	65	60	58
250	White Hill Lily ...	3 30 "	4 10 "	40	60	56
251	White Hill Brundish ...	3 35 "	4 15 "	40	60	57

BUTTER TESTS—AYRSHIRES.

No. In Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Ratio, viz., lbs. Butter to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards.
							Morn.	Even.	Total		Colour	Quality				
			lbs.				lbs ozs	lbs ozs	lbs ozs							
267	Hon. G. Corbett...	Auchenbrain Yellow Kate 12th	1121	Jan. 5, 1915	Sept. 5	1924.							36.25	0.50	36.75	H.C.
268	Lt.-Col. R. E. Cecil	Netherton Queen	1385	Jan. 28, 1920	Oct. 1		1933	3.27	2.60	5.3		Fair	51.0	—	51.00	1st Prize
269	Major C. R. Dudgeon	Greenfield 4th Cargen Holm	1177	Aug. 10, 1919	Sept. 25		2537	6.31	8.08	14.2		Fair	39.75	—	39.75	3rd Prize
271	J. Seton ...	Sally 3rd Shewalton Mains	1295	Dec. 4, 1916	Sept. 21		2930	2.23	5.53	7.2		Good	37.25	—	37.25	H.C.
272	A. Cochrane ...	Violet 3rd Nether Craig	1258	Dec. 25, 1918	Sept. 28		2233	14.30	13.64	11.1		Pale	26.25	—	26.25	
273	A. W. Montgomerie	Fame Lessnessock	1160	Mar. 23, 1918	Sept. 12		3828	0.26	0.54	0.2		Fair	43.25	—	43.25	2nd Prize
275	W. Murdoch ...	Dainty Maid Bunton Hill	1103	Oct. 26, 1919	Oct. 2		1828	14.25	10.54	8.1		Good	24.25	—	24.25	
277	A. & A. Kirkpatrick	Ennise 2nd Auchinbay Meg...	1178	Feb. 15, 1918	Sept. 19		3136	3.29	3.65	6.2		Pale	36.25	—	36.25	H.C.
278	Hon. G. Corbett	Rowallan Augusta 3rd	1187	Mar. 12, 1922	Sept. 14		3621	3.19	6.40	9.1		Fair	27.50	—	27.50	H.C.
279	Lt.-Col. W. T. R. Houldsworth	Garlaiff Miss Edna	1181	Dec. 20, 1921	Oct. 3		1723	13.19	10.43	7.2		Good	32.00	—	32.00	H.C.
283	Major C. R. Dudgeon	Cargen Holm Maud 18th	982	Jan. 28, 1922	Oct. 6		1423	14.20	11.44	9.1		Pale	31.50	—	31.50	H.C.

BUTTER TESTS—AYRSHIRES—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards
							Morn.	Even.	Total			Colour	Quality				
284	Major C. R. Dudgeon	Cargen Holm	1022	Mar. 2, 1922	1924, Oct.	7	13	23	2	18	10	41	12	1	51	21-50	
285	Major C. R. Dudgeon	Miss Robb 12th	1036	Jan. 22, 1922	Sept. 25		25	24	11	20	8	45	3	1	141	30-50	H.C.
287	A. Y. Allen	Cargen Holm	1116	Aug. 19, 1921	Sept. 28		22	21	10	18	3	39	13	1	81	24-75	
294	A. W. Montgomerie	Aitkenbar Blue	1012	Mar. 23, 1922	Sept. 7		43	18	8	15	2	33	10	1	71	23-25	
		Bell															
		Lessnessock															
		Dainty Girl 3rd															

BUTTER TESTS—AYRSHIRES—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Degrees
267	Auchenbrain Yellow Kate 12th ...	4 5 p.m.	5 5 p.m.	60	60	58
268	Netherton Queen Greenfield 4th...	3 13 "	3 40 "	27	60	57
268	Cargen Holm Sally 3rd	3 54 "	4 28 "	34	60	56
271	Shewatton Mams Violet 3rd	4 19 "	4 51 "	32	60	58
272	Nether Craig Fame	4 28 "	4 48 "	20	60	57
273	Lessnessock Dainty Maid	4 45 "	5 12 "	27	60	54
275	Bunton Hill Eunice 2nd	4 50 "	5 15 "	25	60	55
277	Auchinbay Meg	4 47 "	5 10 "	23	60	54
278	Rowallan Augusta 3rd	4 57 "	5 41 "	44	60	56
279	Gariaff Miss Elna	4 45 "	5 10 "	25	60	54
283	Cargen Holm Maud 18th	4 54 "	5 20 "	26	60	54
284	Cargen Holm Miss Robb 12th	5 2 "	5 30 "	28	60	58
285	Cargen Holm Elfrida 2nd	5 10 "	5 35 "	25	60	55
287	Aitkenbar Blue Bell	5 21 "	5 52 "	31	60	54
294	Lessnessock Dainty Girl 3rd	5 8 "	6 20 "	72	60	60

BUTTER TESTS—GUERNSEYS.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Butter Yield Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards						
							Morn.	Even.	Total		Colour	Quality										
			lbs.				lbs	ozs	lbs	ozs	lbs	ozs										
299	A. Chester Beatty	Lizette of St. Catherine	1020	June 20, 1918	1924. June	7	135	16	2	14	3	30	5	1	7½	22.4	Good	Fair	23.50	9.50	33.00	H.C.
302	J. B. Body	Lynchmere Rosy of Mauxmarquis	1182	June 25, 1916	Sept. 19	31	24	8	20	8	45	0	2	4½	19.7	Good	Fair	36.50	—	36.50	H.C.	
305	W. F. Trumper	Dahlia Rosette	1110	Dec. 20, 1918	Aug. 21	60	18	0	15	10	33	10	1	7½	22.7	Good	Good	23.75	2.00	25.75		
306	Sir J. Remnant, Bart.	Southern Starette	1006	Dec. 10, 1920	April 5	198	21	0	17	0	38	0	1	11	22.4	Good	Soft	27.00	12.00	39.00	2nd Prize	
307	Exors. of late Sir W. Cain, Bart.	Emblem's Enchantress	974	Aug. 15, 1920	Sept. 5	45	15	3	13	2	28	5	1	4	22.6	Good	Fair	20.00	0.50	20.50		
308	J. B. Body	Moreland Lady Richmond	974	Feb. 15, 1921	May 8	165	16	3	13	3	29	6	1	12	16.7	Good	Fair	28.00	12.00	40.00	1st Prize	
309	J. B. Body	Tregye Cloud	901	Aug. 29, 1920	Sept. 1	49	18	5	16	5	34	10	1	12½	19.4	V. Good	Good	28.75	0.90	29.65	H.C.	
311	A. Chester Beatty	Addington Begum	959	Jan. 21, 1920	Sept. 18	32	18	10	17	11	36	5	0	11½	49.5	Good	Soft	11.75	—	11.75		
315	W. F. Trumper	Dahlia Ruby	746	Nov. 24, 1920	Sept. 23	27	23	10	19	1	44	3	8	12	24.9	V. Good	Soft	28.00	—	28.00	H.C.	
316	Sir E. A. Hambro	Milton Rosey	899	Sept. 19, 1921	Mar. 8	226	18	3	14	0	32	3	1	9½	20.2	V. Good	Good	25.5	12.00	37.50	3rd Prize	
317	Sir J. Remnant, Bart.	Dene Merton Preel	893	Aug. 5, 1921	Oct. 3	17	21	11	17	14	39	9	1	14½	18.7	Good	Good	30.50	—	30.50	H.C.	

BUTTER TESTS—GUERNSEYS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total No. of Points	Awards		
							Morn.	Even.	Total			Colour	Quality						
			lbs.				lbs	ozs	lbs	ozs	lbs	ozs							
318	Lady Ludlow ...	Levonias Beauty of Grand Port 4th	897	Mar. 12, 1922	1924. July	1111	18	016	034	01	81	22-5 V. Good	Good	24-25	7-10	31-35	H.C.		
322	A. Chester Beatty	Jenny's Violet 2nd	756	Jan. 17, 1922	Sept. 9	4116	14	14	10	31	81	41	25-1	Good	20-50	0-10	20-60		
323	W. F. Trumper ...	Rangbourne Rosie	809	Oct. 4, 1921	July	5107	15	10	13	11	29	51	5	22-3 V. Good	Soft	21-00	6-70	27-70	H.C.
324	Mrs. Jervoise ...	Minnie of Carteret 2nd	950	Nov. 13, 1921	Aug. 21	6018	316	834	11	11	12	12	19-8	Good	28-00	2-00	30-00	H.C.	
325	Mrs. Jervoise ...	Herriard Lady Buller 4th	913	May 9, 1922	Sept. 5	4520	816	14	37	61	7	7	25-9 V. Good	Good	23-00	0-50	23-60		

BUTTER TESTS—GUERNSEYS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Degrees
299	Lizette of St. Catherine ...	5 17 p.m.	5 40 p.m.	23	60	52
302	Lynchmere Rosy of Mauxmarquis 4th	5 15 "	5 35 "	20	60	52
305	Dahlia Rosette 4th ...	5 17 "	5 50 "	33	60	52
306	Southern Starette ...	5 16 "	5 47 "	31	60	52
307	Emblem's Enchantress ...	5 15 "	5 37 "	22	60	52
308	Moreland Lady Richmond ...	5 27 "	5 56 "	29	60	52
309	Tregye Cloud ...	5 24 "	6 16 "	52	60	52
311	Addington Begum 4th ...	5 24 "	6 0 "	36	60	52
315	Dahlia Ruby ...	5 27 "	5 55 "	28	60	52
316	Milton Rosey 5th ...	5 38 "	6 15 "	37	60	52
317	Dene Merton Pread ...	5 40 "	5 55 "	15	60	52
318	Levonias Beauty of Grand Fort 4th	5 40 "	6 40 "	60	60	52
322	Jenny's Violet 2nd ...	5 45 "	6 20 "	35	60	52
323	Rangbourne Rosie ...	5 52 "	6 25 "	33	60	52
324	Minnie of Carteret 2nd ...	5 50 "	6 15 "	25	60	52
325	Herriard Lady Buller 4th ...	5 48 "	6 10 "	22	60	52
					Degrees	Degrees
					54	52
					52	56
					56	56
					56	56
					55	55
					56	56
					56	56
					55	55
					60	60
					58	58
					56	56
					54	54
					56	56

BUTTER TESTS—JERSEYS.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield in 24 hrs.	Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation.	Total Number of Points	Awards
										Colour	Quality				
328	W. V. Doughty, J.P.	Rochette Rose ...	lbs. 778	July 17, 1918	1924. June 20	121	lbs. ozs. 31 10	1 8 $\frac{3}{4}$	20-86	V. Good	V. Good	24-25	8-10	32-35	
333	R. Bruce Ward ...	Last of the Marigolds	911	Feb. 2, 1917	May 17	155	37 4	2 6 $\frac{1}{2}$	15-48	V. Good	V. Good	38-50	11-50	50-00	3rd Prize.
335	N. Gwynne ...	Calicora's Finch...	840	Sept. 6, 1915	June 11	130	32 15	1 11 $\frac{1}{2}$	19-16	Good	V. Good	27-50	9-00	36-50	C. of M.
337	L. E. Tubbs ...	Oxlip ...	892	July 23, 1919	April 30	172	42 10	1 14	22-73	V. Good	V. Good	30-00	12-00	42-00	C. of M.
342	Mrs. O. Ames ...	Frostie 4th ...	888	Aug. 26, 1918	Feb. 28	234	36 0	2 0 $\frac{3}{4}$	17-58	Good	Ex.	32-75	12-00	44-75	C. of M.
343	Mrs. O. Ames ...	Fairy Winks ...	912	Dec. 4, 1917	Feb. 15	247	25 4	1 8 $\frac{3}{4}$	16-48	Good	V. Good	24-50	12-00	36-50	C. of M.
344	Mrs. O. Ames ...	Blanco's Mite 3rd	868	May 16, 1916	April 11	191	34 2	2 2	16-05	V. Good	Ex.	34-00	12-00	46-00	C. of M.
345	J. Pierpont Morgan	Aero Viola ...	928	Aug. 22, 1917	Aug. 4	76	24 2	1 13 $\frac{1}{2}$	13-08	Pale	V. Good	29-50	3-60	33-10	
346	J. Pierpont Morgan	My Pet's Katie ...	856	May 2, 1919	Sept. 2	47	32-12	1 10 $\frac{1}{2}$	19-77	Pale	V. Good	26-50	0-70	27-20	
348	G. Cross ...	Hamletta's Queen	766	Mar. 10, 1918	April 19	183	36 7	1 11 $\frac{1}{2}$	21-20	V. Good	Good	27-50	12-00	39-50	C. of M.
349	Mrs. H. Briggs ...	Lily of the Valley	989	Oct. 26, 1917	May 22	150	35 13	1 11 $\frac{1}{2}$	20-83	Good	Good	27-50	11-00	38-50	C. of M.
350	Major H. W. Huntington	Marriette's Violet	882	July 23, 1917	June 26	115	46 10	2 8 $\frac{1}{4}$	18-53	V. Good	V. Good	40-25	7-50	47-75	C. of M.
351	E. Birkett ...	Negundo ...	810	Jan. 13, 1917	June 27	114	45 2	2 2	21-23	Good	V. Good	34-00	7-40	41-40	C. of M.

BUTTER TESTS—JERSEYS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield in 24 hrs.		Butter Yield	Ratio, viz., lbs. Butter to lbs. Milk	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of Points	Awards.
							lbs.	ozs.			Colour	Quality				
352	E. Birkett	Golden Raspberry	825	Dec. 29, 1920	1924. Feb. 9	253	33	15	2 7	13-94	Good	V. Good	39-00	12-00	51-00	2nd Prize.
354	H. K. King	Urapolitaine	738	April 24, 1921	Aug. 18	62	30	13	1 14 $\frac{1}{2}$	16-29	Good	V. Good	30-25	2-20	32-45	C. of M.
356	R. W. Carson	Masterman's Golden Cidonia	1089	June 18, 1920	May 26	146	24	12	2 3 $\frac{1}{2}$	11-15	Pale	Ex.	35-50	10-60	46-10	C. of M.
358	J. H. N. Roberts	Weybeard's Fanny	795	Oct. 27, 1919	Aug. 10	70	34	5	1 13 $\frac{1}{2}$	18-45	V. Good	V. Good	29-75	3-00	32-75	C. of M.
359	J. H. N. Roberts	Duchess of Carita 4th	1010	Mar. 8, 1920	July 9	102	29	10	1 11	17-55	Ex.	V. Good	27-00	6-20	33-20	C. of M.
360	J. Pierpont	Lady Memento	901	Jan. 4, 1920	Aug. 16	64	22	12	1 3 $\frac{1}{2}$	18-43	Pale	Good	19-75	2-40	22-15	
361	W. V. Doughty, J.P.	Ickleford Three...	844	Dec. 24, 1920	July 29	82	28	15	1 7 $\frac{1}{2}$	19-91	Good	Good	23-25	4-20	27-45	
362	W. V. Doughty, J.P.	Survillie Blond's Fern	869	May 15, 1921	May 2	170	22	8	1 5 $\frac{1}{2}$	16-55	Good	Good	21-75	12-00	33-75	C. of M.
363	G. Cross	Robert's Star	848	Oct. 15, 1920	May 4	168	27	15	1 8	18-62	V. Good	V. Good	24-00	12-00	36-00	C. of M.
370	R. Bruce Ward	Pirouette	966	April 3, 1920	June 7	134	34	13	2 4	15-47	V. Good	V. Good	36-00	9-40	45-40	C. of M.
371	R. Bruce Ward	Princess Marigold	881	April 26, 1920	May 21	151	41	7	2 9 $\frac{1}{2}$	16-07	V. Good	Ex.	41-25	11-10	52-35	1st Prize
375	Mrs. Hayes Sadler	Fontaine's Lilac...	848	Feb. 12, 1920	July 9	102	39	2	1 15 $\frac{1}{2}$	19-71	V. Good	Good	31-75	6-20	37-95	C. of M.
378	G. Berry	Dewberry	882	April 7, 1920	July 22	89	46-7		2 0 $\frac{1}{2}$	23-03	V. Good	Good	32-25	4-90	37-15	C. of M.

BUTTER TESTS—JERSEYS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight.	Date of Birth	Date of last Calf	No. of Days in Milk	Milk Yield in 24 hrs.	Butter Yield.	Ratio, viz., lbs. Milk to lbs. Butter.	Colour and Quality of Butter		No. of Points for Butter.	No. of Points for Lactation	Total Number of Points.	Awards.
										Colour	Quality				
379	G. Berry	Standon Dinah ...	979	Nov. 20, 1919	1924.	157	lbs. ozs. 34 2	1 13 $\frac{1}{2}$	18.35	Good	Good	29.75	11.70	41.45	C. of M.
387	Mrs. E. Watts	Essence Pride ...	797	Jan. 8, 1922...	May 31	141	31 12	1 11	18.81	Good	Good	27.00	10.10	37.10	C. of M.
391	R. Bruce Ward	Philandra ...	841	Nov. 20, 1921	May 13	159	26 10	1 9 $\frac{1}{2}$	16.54	Good	V. Good	25.75	11.90	37.65	C. of M.
392	R. Bruce Ward	King Cup ...	784	April 25, 1922	May 17	155	27 15	1 11 $\frac{1}{2}$	16.10	Good	V. Good	27.75	11.50	39.25	C. of M.
398	G. Berry	Cloudberry ...	606	Sept. 7, 1922	Sept. 13	36	28 12	1 9 $\frac{1}{2}$	18.03	V. Good	Good	25.50	—	25.50	
402	Mrs. O. Ames	Cid's Raleigh's Spectre	774	March 1, 1922	May 21	151	25 12	1 8 $\frac{1}{2}$	16.81	V. Good	Ex.	24.50	11.10	35.60	C. of M.

BUTTER TESTS—JERSEYS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				Temperature		
		Time		Duration of Churning	Dairy	Cream and Churn	Buttermilk, when churning finished	
		Churning began	Churning finished					
				Minutes	Degrees	Degrees	Degrees	
328	Rochette Rose ...	9 10 a.m.	9 42 a.m.	32	56	52	54	
333	Last of the Marigolds ...	9 12 "	9 40 "	28	56	52	54	
335	Calicoora's Finch ...	9 15 "	9 43 "	28	56	52	53	
337	Oxlip ...	9 20 "	10 20 "	60	56	52	57	
342	Frostie 4th ...	9 25 "	10 0 "	35	56	52	55	
343	Fairy Winks ...	9 27 "	10 17 "	50	56	52	55	
344	Blanco's Mite 3rd ...	10 3 "	10 45 "	42	56	52	56	
345	Aero Viola ...	10 8 "	11 24 "	76	56	52	54	
346	My Pet's Katie ...	10 14 "	10 34 "	20	56	52	55	
348	Hamletta's Queen ...	10 25 "	10 50 "	25	57	52	56	
349	Lily of the Valley ...	10 30 "	11 0 "	30	58	52	54	
350	Marriette's Violet ...	10 55 "	11 46 "	51	60	52	55	
351	Negundo ...	11 12 "	11 40 "	28	60	52	54	
352	Golden Raspberry ...	11 15 "	12 25 p.m.	70	60	52	56	
354	Urapoltaine ...	11 35 "	12 20 "	45	60	52	54	
356	Masterman's Golden Cidonia	11 45 "	12 45 "	60	60	52	56	
358	Weybeard's Fanny ...	11 50 "	12 20 "	30	60	52	54	
359	Duchess of Carita 4th ...	12 15 p.m.	12 50 "	35	60	52	54	
360	Lady Memento ...	12 20 "	12 45 "	25	60	52	54	
361	Ickleford Thre ...	2 27 "	3 0 "	33	60	52	55	
362	Survillie Bland's Fern ...	2 30 "	2 55 "	25	60	52	55	
363	Roberta's Star 2nd ...	2 35 "	2 50 "	15	60	52	54	
370	Pirouette ...	2 38 "	3 20 "	42	60	52	55	

BUTTER TESTS—JERSEYS—Continued.

No. in Catalogue	Name of Animal	CHURNING—TIME AND TEMPERATURE				
		Time		Temperature		
		Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn
				Minutes	Degrees	Buttermilk, when churning finished
371	Princess Marigold ...	2 40 p.m.	3 30 p.m.	50	60	Degrees 54
375	Fontaine's Lilac ...	2 45 "	3 20 "	35	60	55
378	Dewberry ...	3 0 "	3 34 "	34	60	54
379	Standon Dinah ...	3 15 "	3 50 "	35	60	55
387	Essence Pride ...	3 20 "	3 55 "	35	60	54
391	Philandra ...	3 39 "	4 20 "	41	60	56
392	King Cup ...	3 45 "	4 11 "	26	60	54
398	Cloudberry ...	3 50 "	4 5 "	15	60	53
402	Cid's Raleigh's Spectre ...	3 55 "	4 30 "	35	60	54

BUTTER TESTS—OTHER BREEDS

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Ratio, viz., lbs. Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total Number of	Awards				
							Morn.	Even.	Total			Colour	Quality								
							lbs	ozs	lbs	ozs	lbs	ozs									
DEVON.																					
202	A. T. Loram ...	Novah ...	1137	1915	1924.	Aug. 31	50	25	10	21	0	46	10	1	12	26	1	00	29	00	
203	A. T. Loram ...	Petunia ...	1068	1918	Sept. 14	36	15	10	14	11	30	5	1	4	24	2	00	20	00	—	
207	R. A. Clarke & Sons	Gentle ...	1214	—	Sept. 14	36	25	11	21	0	46	11	1	15½	23	7	V. Good	Soft	31	50	£3 Prize.
BLUE ALBION.																					
254	Lt.-Col. W. E. Harrison	Poplars Beauty...	1306	—	Oct. 4	16	25	8	24	2	49	10	2	1	24	1	Fair	Fair	33	00	£2 Price.
255	A. Trafford ...	Bradbourne Sweet Pea	1231	Sept. 10, 1920	Sept. 26	24	23	11	17	6	41	11	9½	25	7	Good	Good	25	75	—	
256	A. Trafford ...	Bradbourne Maid	1298	Aug. 6, 1919	Oct. 7	13	23	2	20	3	43	5	2	3½	19	6	Fair	Fair	35	50	£3 Prize.
262	J. W. Towler ...	Elton Bluebell ...	1294	—	Aug. 28	53	27	6	21	6	48	12	1	15	25	1	Pale	Good	31	00	1-30/32-30 H.C.
KERRY.																					
407	Lt.-Col. J. Bennett Stanford	Pythouse Aggie...	978	1915	July 19	93	23	0	19	5	42	5	2½	19	6	V. Good	Good	34	50	5-30/39-80	£3 Prize.
408	J. W. Towler ...	Rosebud of Carton	1036	Mar. 10, 1919	Aug. 29	52	22	14	24	6	47	4	11½	27	7	Pale	Good	27	25	1-20/28-45	

BUTTER TESTS—OTHER BREEDS—Continued.

No. in Catalogue	Exhibitor	Name of Animal	Live Weight	Date of Birth	Date of Last Calf	No. of Days in Milk	Milk Yield			Butter Yield	Milk to lbs. Butter	Colour and Quality of Butter		No. of Points for Butter	No. of Points for Lactation	Total No. of Points	Awards
			lbs.				Morn.	Even.	Total	ozs lbs ozs lbs ozs lbs ozs		Colour	Quality				
KERRY—Continued.																	
410	{ Theosophical Educational Trust (Great Britain and Ireland), Ltd.	Buckhurst	868	July 15, 1915	Sept. 27	1924.	23 21	6 17	0 38	61 10½	23 4	Fair	Soft	26 75	—	26 75	H.C.
411		Bubbles } Busy Bee of Warren	835	Oct. 29, 1918	May 16	157 12	13 10	3 23	0 1	4	18 4	Good	Good	20 00	11 70	31 70	
412		Buckhurst } Surprise	1046	July, 1915 ...	June 18	124 16	0 12	5 28	5 1	8½	18 5	Fair	Good	Good	24 50	8 40		32 90
413	L. Currie	Minley Winnie ...	1078	Oct. 22, 1917	Aug. 22	59 17	8 15	6 32	14 1	1	31 0	Good	Good	17 00	1 90	18 90	£2 Prize.
414	L. Currie	Minley Trixie ...	1173	Jan. 19, 1919	Aug. 23	58 11	6 9	13 21	30	8½	39 8	Good	Fair	8 50	1 80	10 30	
416	Capt. N. Zambra, M.C., & C.	Castlelough Hannah	884	April 18, 1917	Sept. 6	44 21	5 17	8 38	13 1	10	23 5	Pale	Good	26 00	0 40	26 40	
423	Miss P. de B. Williamson-Milne	Drumgaunagh Joyce	670	Dec. 16, 1921	Aug. 29	52 10	11 5	11 16	61	0½	15 7	Good	Soft	16 75	1 20	17 95	£3 Prize.
424	Miss P. de B. Bowen-Colthurst	Drumgaunagh Primrose	586	Mar. 2, 1922	Aug. 20	61 5	5 9	5 14	10 0	9	26 1	Good	Good	9 00	2 10	11 10	
DEXTER.																	
430	Col. W. O. Gibbs	Woodleigh	664	Aug. 21, 1921	June 10	132 13	11 11	5 25	0 1	2	22 2	Pale	Soft	18 00	9 20	27 20	£3 Prize.
433	Mrs. M. H. Neville	Creole of Daphne Copthorne	560	June 18, 1922	Sept. 26	24 12	2 8	3 20	50	13½	24 2	Good	Good	13 50	—	13 50	

BUTTER TESTS—OTHER BREEDS—Continued.

No. in Catalogue		Name of Animal	CHURNING—TIME AND TEMPERATURE															
			Time		Temperature													
			Churning began	Churning finished	Duration of Churning	Dairy	Cream and Churn	Buttermilk, when churning finished										
202	203	207	234	255	256	262	407	408	410	411	412	413	414	416	423	424	430	433
Novah	Petunia	Gentle	Poplars Beauty	Bradbourne Sweet Pea	Bradbourne Maid	Elton Bluebell	Pythouse Aggie	Rosebud of Carton	Buckhurst Bubbles	Busy Bee of Warren	Buckhurst Surprise	Minley Winnie	Minley Trixie	Castletough Hannah	Drumgaunagh Joyce	Drumgaunagh Primrose	Woodleigh Daphne	Creole of Cophthorne
3 25 p.m.	3 30 "	12 37 "	3 45 "	3 52 "	4 0 "	3 15 "	6 5 "	5 55 "	6 25 "	6 8 "	6 5 "	6 2 "	6 20 "	6 17 "	6 27 "	6 20 "	6 17 "	
3 54 p.m.	3 50 "	1 0 "	4 7 "	4 17 "	4 20 "	3 30 "	6 55 "	6 25 "	6 52 "	6 40 "	6 29 "	6 25 "	6 25 "	7 30 "	7 5 "	7 20 "	7 15 "	6 38 "
29	20	23	32	25	20	15	50	30	32	27	29	20	23	70	48	53	55	21
Degrees 55	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 55	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 54	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 54	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
Degrees 56	Degrees 52	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60	Degrees 60
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NEW INVENTIONS

AT THE DAIRY SHOW, 1924.

By WILLIAM BURKITT, B.Sc., F.H.A.S., N.D.D.

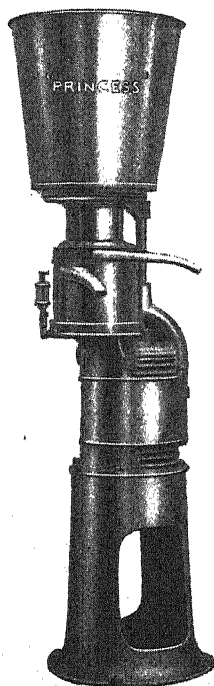
ONCE again there was a good entry in this section of the Show. Of the 30 catalogued, 29 were present, and 26 competed, three being withdrawn by permission, as being incomplete.

For the first time a Gold Medal was offered for the best New Invention shown and considered by the Judge to be of sufficient merit. This was awarded for the electrically-driven "Princess" Separator, exhibited by Sutherland, Thomson & Co., 31, Tooley Street, London, S.E. 1, and manufactured by the well-known Scottish Engineers, Watson, Laidlaw & Co., Ltd., of Glasgow. This separator has been designed for long and continuous running without attention. The electric motor forms part of the separator column, the armature runs in ball bearings fitted in to grease-tight casings, which hold sufficient lubricant for many months' working.

A fan for cooling the motor is fitted between the armature and the bottom bearing; the armature spindle extends through the bottom cover and is fitted with a helical spur gear wheel, with centrifugal clutch, gearing directly on to a pinion on the drum spindle, the gears and clutch running in an oil bath.

The centrifugal clutch eliminates a starting rheostat, and permits of starting on no load, and a considerable speed being attained before the drum revolves, this gains speed slowly and smoothly through the action of the centrifugal slippers. The gears are noiseless and there is none of the grinding found in an ordinary spiral gear.

The ball-bearing of the drum spindle permits of gyration while gaining speed, whilst the top bearing is unusual, consisting of a spiral spring flanged out at the bottom, and secured to the column by two steel washers

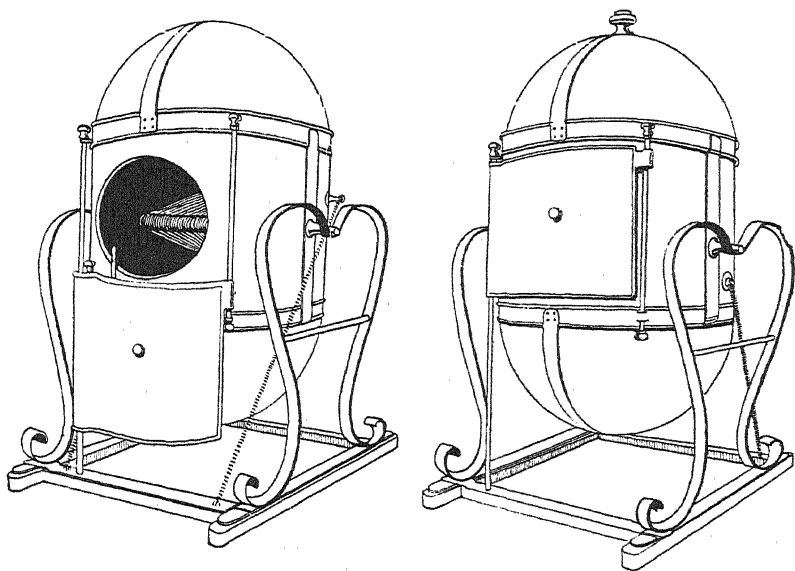


Electrically-driven
"Princess" Separator.

and a gland; the bush proper fits into the spiral which is secured by two screwed rings, which adjust the movement of the bush.

The drum is substantially made, machined from a solid billet, with interchangeable plates which can take any position in relation to each other in the drum.

Whilst the working parts are protected from water and milk they are easily accessible for repairs or cleansing; the armature, with gears and fan, can be removed by loosening four bolts; in general, the whole machine is well made and well finished, and has a separating capacity of 130 gallons per hour.



Equalizer Cream Vessel.

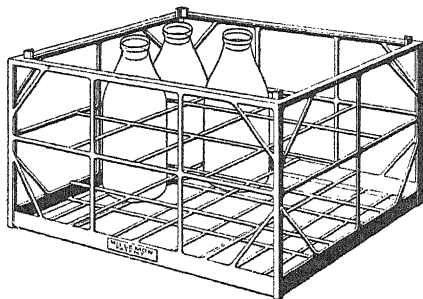
Four Silver Medals were awarded, the first being gained by the simple and ingenious Cream and Milk Equalizer, invented by a faithful friend and supporter of many Dairy Shows, Sir Sidney J. Pocock, J.P., and exhibited by the Dairy Outfit Company, of 27, Pentonville Road, King's Cross, N.

The Equalizer, which is cylindrical, with domed ends, is made of glazed Doulton ware, and revolves on axle-arms resting on metal supports, the axles being fastened to the body by brass clips, which are all removable for cleansing if necessary.

The brass clips also carry a sliding door to close the opening from air and dust when not in use, and the milk is equalised by turning the holder top to bottom, when the milk flows over a weir in the centre

and is thoroughly mixed ; a double turn brings the apparatus into position again, the measure being hung inside for cleanliness, the whole arrangement being effective, simple, and easily cleaned.

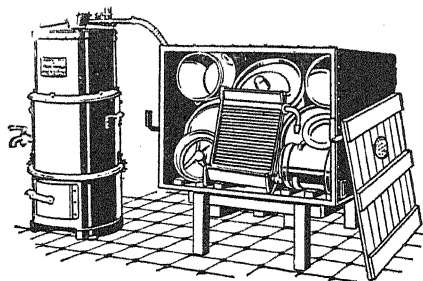
A Silver Medal was gained by the Dairy Supply Co., Ltd., for their "Millemon" Wireless Welded Steel Container for Milk Bottles. These baskets are exceedingly strong, all joints being galvanized before welding. They are very light and not more costly than the wood and wire boxes, and must be, we think, more durable, whilst they are certainly more sanitary.



"Millemon" Wireless Welded Steel Container for Milk Bottles.

The very successful and well-known "Cleena Milk" Steam Sterilizing Outfit shown by Barford & Perkins, Ltd., of Peterborough, was awarded a Silver Medal, providing for £34 a sterilizing outfit sufficient for any ordinary dairy farm. The steam is supplied by a "Safety First" steam generator, which can be dismantled and released within five minutes without undoing any bolts or nuts ; it is absolutely safe, can be left unattended, and cannot explode, and connects by a rubber hose to the steaming chest.

With a coal consumption of about 14 lbs. per hour, it will sterilize dairy vessels, cook cattle and pig foods in a steam-jacketed boiling pan, and produce up to 35 gallons of boiling water.



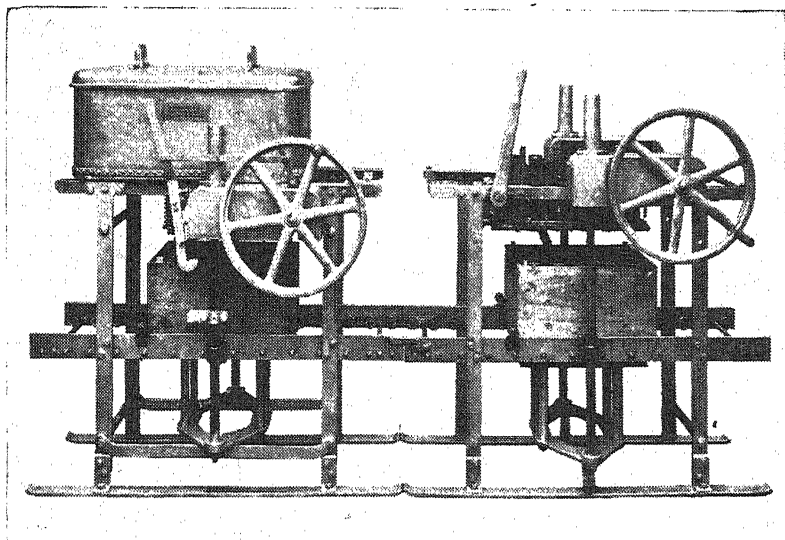
"Cleena Milk" Steam Sterilizing Outfit.

The steam chest of galvanized iron, with an easily removable wooden door, will steam and sterilize four 17-gallon churns, six milk

pails, strainer, cooler, and fittings, and milking stools at one operation, and in our opinion, from its simplicity and efficiency meets a long-felt want.

The fourth Silver Medal was won by A. Grabham & Co., Ltd., 373, Essex Road, London, N. 1, for their combination of "Straight-away" Lightning Bottle Filler and Capping or Discing Machine.

The bottles are filled without handling at all, at the rate of 3,000 per man per hour, the plant is practically valveless, and bottles of varying capacities can be filled with any predetermined quantity of milk. The bottles are lifted independent of the cases, located by a spring stop device, so that each bottle reaches its proper place under the filler; a roller track carries the cases and allows for a continuous process of fitting and discing.



"Straightaway" Lightning Bottle Filler and Capping or Discing Machine.

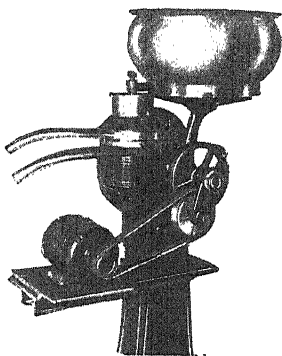
A somewhat similar method is followed in the capping machine, a spring stop locates the bottles under the discs, rising independent of their cases the bottles are guided by conical projectors to a central position as the discs enter the bottle mouths.

This ingenious plant for a large business costs £251, the filler alone costing £130.

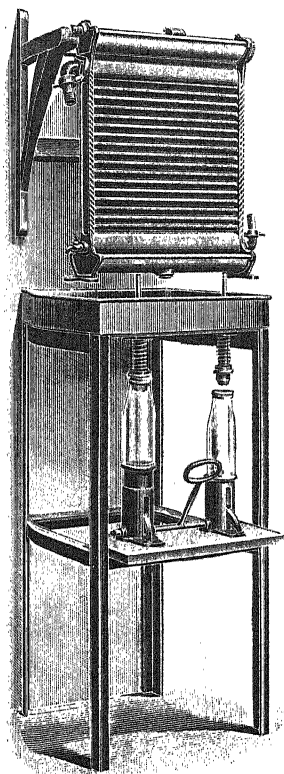
Seven Bronze Medals were awarded, as follows, viz., to the Associated Manufacturers' Co. (London), 72, Mansell Street, Aldgate, E. 1, for Wearn's Automatic Drive for Milk Separators, &c. An extended sleeve bushing, with large gear is fitted on to the driving

axle or stub of the separator; a frame carrying the pulleys is mounted on the sleeve, this allows the pulleys to swing, with the result that when the belt is rotated in the right direction the small pinion tends to climb the gear, thus tightening the belt. Sudden impulses are, therefore, checked, the bowl running at a uniform speed, and there are very few, if any, shocks to the separator. The drive, costing £3 10s., can be fitted to any separator.

Messrs. Vipan & Headley, of Abbey Gate, Leicester, gained a Bronze Medal for their machine for automatically filling and capping milk bottles, which can be used with a milk cooler or independently. A tray below a cooler carries two removable spring



Wearn's Automatic Drive.

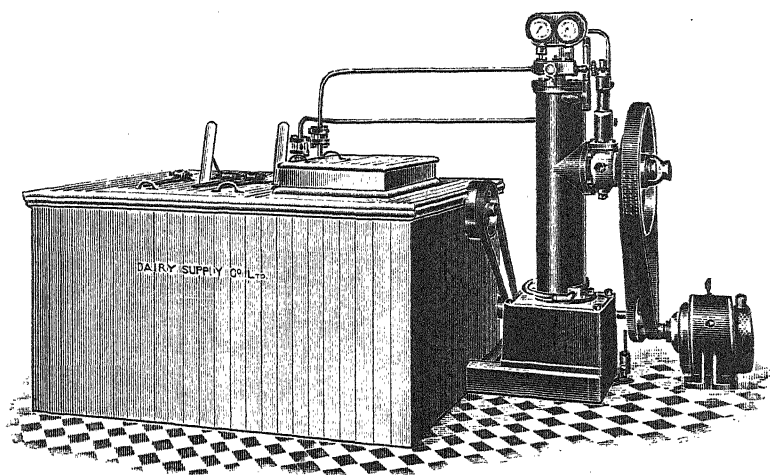


Machine for Automatically Filling and Capping Milk Bottles.

valves, these are air-regulated, so as to prevent over-filling of the bottles, and are worked alternately being what is known as a "one man" plant for farmer or small dairy. The capper is worked by a hand lever, whilst the second bottle is filling, and the whole operation is stopped by turning off the tap of the cooler. A reduced flow is effected by an inside filling, whilst there is no frothing, there being a curved delivery on to the bottom of the spindle.

The machine is very easily cleaned, the valves coming entirely apart, and it is quickly adjustable to quart, pint, or half-pint size, the cost being £25.

The Dairy Supply Co., Ltd., of Museum Street, London, W.C. 1, got a second award of a Bronze Medal for their "Snowdrop" Iceless Ice Cream Plant. Price erected, £285.



"Snowdrop" Iceless Ice Cream Plant.

This is a complete plant for making and storing Ice Cream, with Carbon Dioxide Condenser, evaporator coils, brine tank, making and hardening chambers, and the outfit would also operate a milk refrigerator and cold room. The manufacture of Ice Cream is an important line in many town dairies, and this up-to-date plant produces ice cream under the best conditions, being economical in working, efficient, and taking up little floor space.

The small cream cooler for attachment to a separator as shown by W. H. Smith & Co. (Whitchurch), Ltd., Whitchurch, Salop, received a Bronze Medal, and consist of a stepped or ladder cooler, tapering in width from the separator to the cream vessel, and adjustable to any height or angle.

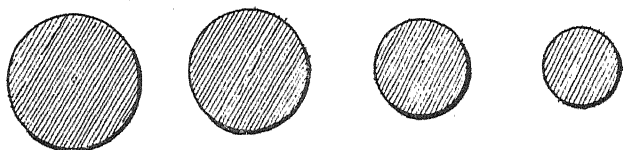
A leaf or dam spreads the cream evenly, and the temperature can be reduced to within 2° of the cooling water. Of British make, this useful little addition to a separator costs £3.

T. Grayson, 16, Queen's Street, Derby, won a Bronze Medal for his Liquid Level Alarm Indicator "The Reminder." With this invention over-filling of railway churns from a cooler is avoided. A float in the churn operates an electric bell by means of a wire to the contact. The bell, if necessary, can ring in the byre or cow house; the fitting costs 21s., and the operating battery 5s. per annum.

A small invention, but useful as a waste saver.

The "Baltic" New Ball Bearing Cream Separator, E.B. 3, of 330 gallons per hour capacity, exhibited by C. Christensen, 24, Rood Lane, London, E.C. 3, price £64, gained a Bronze Medal. The features of this machine are briefly that the ball bearings are totally enclosed from all liquids, &c., and are internally lubricated from the top of the spindle. The main bearings have grease lubrication. The whole spindle can be removed by loosing a screw, and there are no neck or bottom bearings.

The final award of a Bronze Medal was gained by the well-known Dairy Cloth Specialist, A. J. Clare, of Wells, Somerset, for his Woven Fabric Filter Medium, a decided improvement on the cotton-wool filter cloth, being stronger in fabric, and very reasonable in price, *i.e.*, £1 per 1,000.



Woven Fabric Filter Medium.

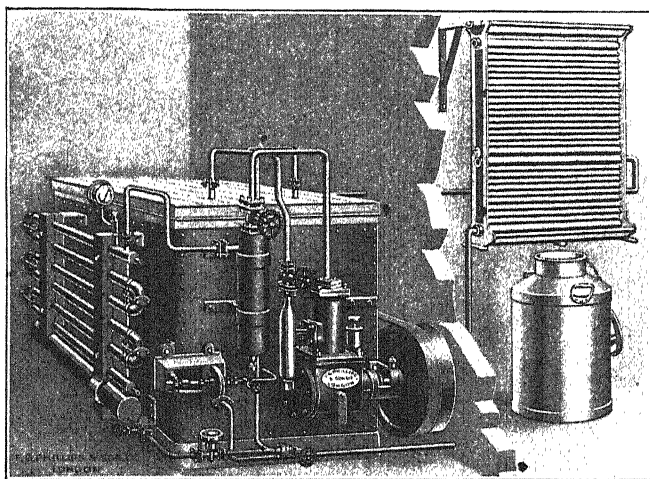
A special feature this year was a separate class for a Small Milk Cooling Plant for farmers, the prize given being a Silver Medal and £20.

The condition of entry was that the plant should be capable of cooling 100 gallons of milk per hour to 40° F., the cost not to exceed £175, erected, the purchaser providing foundations, water connections and power.

For this prize seven entries were received, of which six were forthcoming for the necessary trial, which was conducted as nearly as possible under everyday working conditions. Each plant dealt with 100 gallons of milk, cooling the milk from 95° F., to the required temperature, 40° F., and whilst two-thirds of the competitors fulfilled the required conditions, there were failures through exceeding the time limit, or not reducing to the prescribed temperature of 40° .

On the whole, I think, the competition was successful. The prize plant was very satisfactory in its working and construction, whilst two other plants were worthy of commendation, especially that of Messrs. F. R. Martin & Co.

The first prize of £20, with Silver Medal, was won by Messrs. F. G. Phillips & Son, Ltd., Goodwin Street, Finsbury Park, London, N. 4; the plant is English made, and costs £168.



Milk Cooling Plant of Messrs. F. G. Phillips & Son, Ltd.

This plant is well made and finished, it can be thoroughly cleansed with a minimum of inconvenience, and in its trial was successful in cooling 100 gallons of milk from 95° F. to 39½° F. in 51 minutes.

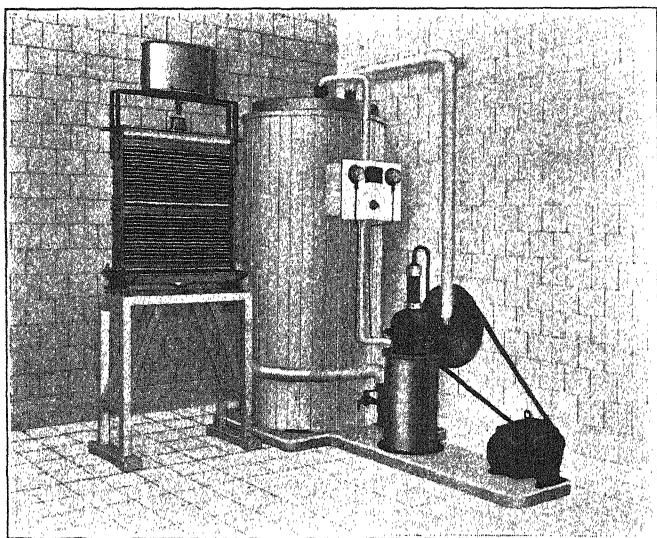
The noticeable features are that the cooler can be taken down; the refrigerating plant has a brine pump working with 120 gallons of brine, the brine temperature varied from 10° to 26°, normally from 20° to 25°; there is no milk pump.

The plant took 1¾ hours to cool down at the close of its task, the brine falling to 20° F. within half-an-hour of work ceasing.

The whole plant, consisting of compressor, condenser, and evaporator, with brine circulating plant and double cooled, can be driven with a 3 horse-power petrol engine or motor.

A workmanlike proposition, this plant should command the attention of farmers and dairymen.

The second award in this class, a Bronze Medal, fell to the exhibit of Messrs. F. R. Martin & Co., Manor Road Works, Lonsome, Streatham Common, London, S.W. 16; a British made machine, this plant cooled 100 gallons of milk from 95° to $38\frac{1}{2}^{\circ}$ in 56 minutes. The price of £173 includes erection and fitting up, and running under a guarantee.



Milk Cooling Plant of Messrs. F. R. Martin & Co.

The plant comprised, as in the last case, a cooler, 130-gallon brine tank, and compressor and pump. The cooler was combined water and brine cooling, the temperature of the water being 55° , whilst the commencing temperature of the brine was 18° F., at the end of an hour's work this had risen to 32° , but was down to 16° F. half-an-hour after work had ceased. This plant ran the winning exhibit a very close race, and did its work efficiently.

The third cooler in order of merit which was "Highly Commended," was shown on the stand of Perfect Dairy Machines, Ltd., Vauxhall Station, London, S.E. 11, which cooled the requisite quantity of milk, 100 gallons in 57 minutes from 95° to 38° . During cooling the brine rose in temperature from 24° to 33° , and in 45 minutes after work ceased it had fallen to $25\frac{1}{2}^{\circ}$.

THE POULTRY SECTION.

By R. FLETCHER HEARNshaw, F.Z.S.

THE new chairman of the Poultry and Pigeon Committee, Mr. W. S. Brocklehurst, is to be congratulated on the fine display of Poultry exhibited at the 1924 Show during his first year of office, and he was well supported by a strong Committee of practical men that made the Poultry Section one of the best in the long history of this great fixture. The total entry was not quite so large as 1923, but the entries were evenly distributed over the classes and the quality all through was splendid.

The Motor Show, Wembley Exhibition, and the bad weather were all against a big attendance on the opening days, but the attendance of breeders and exhibitors was as strong as ever in the Poultry Section, all keen to see the best chickens of the year. Space is *still limited*, so that the classes have *still* to be *limited* to fit the available space.

Classes were put on for the first time this year for Barnevelders, and they contained 25 cockerels and 42 pullets, which proves that this breed that lays such beautiful big brown eggs is daily becoming more popular both for exhibition and utility purposes.

The members of the Poultry and Pigeon Committee had a pleasant little interlude from their duties when they met on Wednesday evening during the Show, which consisted of the presentation to Mr. S. Palgrave Page, J.P., of a gold fountain pen as a mark of esteem for his services for the past 25 years on this committee.

Mr. Page has done splendid work on this committee, and I feel proud to have had the pleasure of working with him. I can personally say how much all the Poultry exhibitors are indebted to him for the way he has studied their interests; he was an ideal chairman and we are all sorry that he has retired.

Again many people suggested a larger Poultry classification, which is still impossible with the limited space at our disposal; therefore, as before, only the most popular classes can be included.

Major G. T. Williams, Mr. H. Jones Robins, and Mr. Clem Watson all judged for the first time at this event and their awards appeared to give general satisfaction.

The Minorca Pullet Selling Class only received three entries, so it was cancelled, and luckily it was the only class to be cancelled in the Poultry Section this year. Last year three classes were cancelled.

Mr. R. Kirk as usual had around him a lot of first-class stewards, and he handled them and the general arrangements of our section in a manner that reflected the greatest possible credit on himself and them.

The sale of exhibits as usual took place on the second morning of the Show, and was ably conducted by Mr. Walters in a new spot, and many thought that it was not so good as the old spot for sound.

The attendance at the sale was good, but on the whole we did not think the prices so good as usual or the birds sold so numerous, although many were claimed in the Selling Classes afterwards. The top price at the auction was Mr. Job Grimshaw's Rhode Island Red Cockerel that was awarded First and Silver Medal for the best Rhode Island Red. He was catalogued at £30 and made £50 at the auction.

Mr. Harold Marshall's Reserve Pullet in the £3 Selling Rhode Island Reds made £27 by auction, which was the highest price made by the Selling Class birds. Mr. W. J. Golding's winner of the £3 Selling Class made £11. Mr. R. Anthony's White Wyandotte in the £3 Selling Class made £11.

Mr. R. Garlick's Barred Rock Cockerel £15, and his selling Pullet £10 10s.

Mr. W. Roger Smith's winner in the Rhode Island Red £3 Selling Class made £10 10s. by auction.

Mr. H. B. Cathcart's winning Modern Game Bantam Cock made £3 5s.

The Special for the best bird in the Show again went to a Wyandotte Cockerel, but this time to a Silver-Laced Wyandotte, shown by Mr. Clifford Calvert, certainly one of the best of his variety seen for many years. Shown in grand condition, a bird that stood right away in his own class, he again repeated this success the week after by winning First and Special for the best in the Show at Nottingham under different Judges.

The Judges at the Dairy Show this year were, as usual, carefully selected and they performed their duties in a most satisfactory manner, for on all sides we heard their awards very favourably commented upon by the exhibitors and the breeders present, which is a pretty good test.

It is a pleasure to state that no late entries are accepted at the Dairy Show, so that the best resolution that exhibitors can make for 1925, if they wish to be exhibitors in the Poultry Section this year, is to make their entries by return post when they get their schedules, for space will again be limited and entries will be closed when the available space is full.

Mr. S. C. Sharpe again gave demonstrations on plucking and trussing Table Poultry, and his lectures and demonstrations were well attended by a crowd of very interested spectators who obtained many hints from his fund of information and practical experience.

He was ably assisted by Mr. H. A. Campbell (a one-arm ex-Service man).

The Table Poultry and Eggs again made a great show; in fact, the quality in the first class for a couple of Sussex was most excellent and contained 25 entries, the winning couple being greatly admired. In the next class for Any Other Variety the winners were Rhode

Island Reds, which proves that this is a dual purpose breed like the Sussex, both of which breeds Farmers would do well to breed instead of so many cross-breds on the farms.

The winners in the next class for Indian Game Cross were a beautiful couple of first cross birds, Indian Game and Sussex. They had wonderful breasts and were well fed and well shown. This class contained 14 couples of grand cockerels, but the next class for Pullets had 17 couples and here the Indian Game and Dorking Cross came out top.

In both the next classes the Sussex and Dorking Cross proved the winners.

In the Waterfowl for Table the Aylesbury Ducks headed the list, and they were a couple of beautiful ones that stood right away.

The Farmers' and Cottagers' Table Poultry Classes were well supported and the three classes contained 43 entries.

The four classes for Eggs were well supported and well judged, and we agree with Lt.-Col. E. W. Caddick, who always takes such a kindly interest in this section, that we never saw a better lot of Table Poultry and Eggs exhibited at the Dairy Show, and it only goes to prove that the British Breeders can produce quality in the department better than anyone in the world ; therefore, it behoves the British Agriculturalists to breed more and better Poultry on the farms to-day and so increase British production.

The classes for Live Utility Poultry were five in number and contained an entry of 395 ; indeed, a wonderful entry, and a compliment to the two gentlemen who judged them, and they contained some really fine quality birds, breed characteristics this year clearly having had the careful consideration of the Judges as well as laying properties. The quality throughout was of a very high order, which necessitated several really good birds being left out of the money.

The general improvement in both size and type was a very pleasing feature in the White Leghorns and White Wyandottes, for the Utility man is at last beginning to realise that it is impossible to get decent sized eggs from Bantams, and the Exhibition man is also becoming aware of the fact that it is equally impossible to get a full egg-basket from the monstrosities that he has bred in the past, so that in the future we shall hit the happy medium and get the ideal Utility bird that we are now looking for.

It was encouraging to find H.R.H. The Prince of Wales, K.G., an exhibitor in these classes. In the Any Other Variety Utility a White La Bresse was the winner, a bird that was much admired, and a very useful breed for egg production.

The Dorkings as usual came first in the classification, and as one of the older exhibition breeds it is right that they should do so, and entries came up fairly well. Size, type, and quality were prominent in the winners, with pure legs and feet, the winning dark pullet taking the medal for the best Dorking. The first and second Silver Grey Cockerels were hard to separate, both possessing lovely colour with deep blocky frames.

The winning Silver Grey Pullet had size of body and pure colour, and should with age make up into a fine hen.

Croad Langshans with 58 entries in two classes made a great show, and the breed for both exhibition and utility is daily becoming more popular. They lay a nice coloured egg and have done well in the laying competitions. The winners were well selected, and the judge is to be congratulated on the splendid way he handled these classes.

Brahmas had four classes, instead of two as last year, and this year 27 birds were entered against 22 last year, which made the average entry per class less than last year. The quality was fairly good, but many of the best were not in full feather on account of the bad season.

Cochins as usual had two classes, but only had 13 entries against 20 last year. The winning Cockerels were all Partridges, and the winning Black Pullet taking the medal for the best Brahma or Cochin, a Partridge being second and a White third.

Sussex as a section were again a wonderful lot, the two classes for Lights as usual receiving the most entries. Here, with 76 cockerels and 109 pullets, the Judge had a good mornings work, together with a good entry in the Selling Classes. We did not think the quality of the cockerels was up to that seen here for the last three or four years, many failing in type and top colour; some were decidedly creamy. Neck hackle is improving, but we must not forsake type and colour for this.

The Light Pullets were a very nice lot and quite up to Dairy standard, the open winner taking the Silver Medal for the best Sussex in the Show. The exhibitors much appreciated the innovation of offering six money prizes for each of the open classes for Light Sussex; the competition warranted this.

Red Sussex with 52 in two classes came up well for this variety, which apparently is daily becoming more popular, the cockerels especially being more typical and larger on the whole than those seen for some time. The winning Cockerel excelled also in colour and proved an easy winner. Pullets too were good, though size might have been better, and several birds were not clear in top colour on their backs.

Speckled Sussex made a very fine collection—type, size and uniformity of markings were much in evidence, the winning Cockerel especially being strong in these points. The winning Pullet was reserve for the best Sussex, and she was a bird of wonderful type and size, with good ground colour, and even markings. Several good exhibits were to be found behind the first three in these two classes.

Brown Sussex made two nice classes. The Pullets were better than the Cockerels; some of the latter were small and of poor type, and several had crooked breast bones, which is a bad fault. Colour on the whole was good, and the pullets showed more evenness in this respect.

Faverolles only mustered 25 entries in three classes against the same number of birds last year in two classes. The Judge recommended that in future classes be only provided for Salmon Faverolles, as the other colours appear at the moment to be making no headway.

The Salmon Cockerels were the best class for quality and the winner took the Special for the best. Pullets were not so good, except the winner, and she was a beauty, and the Any Other Colour Class contained only four Whites.

Wyandottes as usual here were a strong section, and the entries came up well, especially in the Whites, the 52 Cockerels and the 69 Pullets making a grand show. We thought they were well judged, and the exhibitors appreciated having six money prizes in these two classes.

The White Cockerels were of a very good quality although on the whole somewhat unfinished, and the lack of sunlight during the growing stage undoubtedly caused this, also the fact that the sap had not been drawn out of many birds wings and hackles.

The Pullets were better and showed a general improvement in quality. Shape and colour were very good all round, though there were a number of fine birds not absolutely fit.

The Selling Classes contained remarkable quality in both sexes, and a number of birds seemed very cheap at the price limit, and many found new owners.

Gold Laced Wyandottes had 34 entries in two classes. The Cockerels were a nice level lot of birds, but nothing outstanding; their colour and markings are improving, but breeders would do well to pay more attention to type. The Pullets were a good class of 22, but taken on the whole were on the small side, and it would be an improvement to-day if pullets could be a little bigger than we now find them. Silver Laced Cockerels were very good and a great improvement on what we have seen here the last two years. The winning Cockerel was the most perfect Laced Wyandotte probably that has ever been bred, and he took the Champion Gold Medal for the best bird in the Poultry Section.

Silver Laced Pullets were a very level lot, and their lacing and colour left little to be desired, but there is still plenty of room for improvement in shape.

Partridge Wyandottes had two separate classes this year in place of two Any Other Colour Classes last year. They had 24 entries, namely 12 in each class. The Cockerels showed great improvement in top colour and neck and saddle striping, this being especially marked in the winning birds. The Pullets were a very fine lot and better type than the Laced varieties, the winning Pullet standing out from the others in pencilling and colour.

Blacks received a good entry, the two classes containing 50 birds. After the first two birds the Cockerels were rather a disappointing lot. The Pullets on the whole were a better lot.

Columbians had an entry of 46 in two classes, and for type and colour they were a better lot than last year.

Orpingtons for both quality and quantity were taken as a whole better than last year, the winners in each colour being typical well-shown birds.

Black Cockerels were a nice class of average merit, but several of them were not matured and backward in feather. The Pullets were better, and the Medal-winning Pullet was a bird of wonderful size and quality. The fourth prize Pullet here, although young, was very promising.

White Cockerels were not so forward as usual here and no doubt had suffered like many other breeds from the terrible climatic conditions, namely, so much rain and no sunshine during the growing stage. The Pullets were an average lot, the first and second pullets were really first class quality birds.

The Selling Classes contained many cheap, typical Orpingtons. Buff Orpingtons were a grand lot for quality, and the winners in both classes were a lovely type and colour, and the entry of 37 showed a revival in the interest taken in this colour.

The Blue Orpingtons also came along well. For this colour to have 30 birds in two classes was good, the winners being good shape and colour. Rhode Island Reds were a grand lot and showed a great advance on previous years for quality, although there have been more entries, but the 149 single combs and 44 rosecombs made a fine show in the four classes provided for them.

Competition was very keen and an improvement was noticed in the shape of the chickens, the long-legged over-sized specimens that were so common a short time ago being present in very few numbers; colour throughout was of a very high order, and the winners were well selected.

Barnevelders, the recently imported Dutch breed that lay the big, rich brown eggs, were included here for the first time, and the entry was a grand one, 67 birds being entered in the two classes, which shows how rapidly this breed is gaining ground in this country. The Cockerels were rather a disappointing lot, many failing badly in type and colour, but the Pullets made a strong class of 46, and the quality was very high, many good Partridges being shown but few really good double-laced ones. The winning Partridge Pullet was a lovely bird.

Anconas with 67 entries made an attractive show, the quality being good throughout and the quality of the tipping being better than last year.

Frizzles are always quaint and interesting, and the one class provided for them contained 11 chickens, Buffs taking first and second with a White third. Anyone requiring a good laying breed of unusual appearance cannot do better than breed Frizzle fowls.

Old English Game, taking them on the whole, were a good lot and many would win at later events. The winning Black-Red Cockerel

and the winning Partridge Pullet were a grand pair, the Medal being won by the Pullet. The entry was one of the best for several years, which was a compliment to the Judge.

Minorcas had 60 entries in two classes, which shows that great interest is still maintained in this good old breed. The winning Cockerel and the winning Pullet both stood right away, and many birds lower down were very promising, but not quite ready.

Andalusians were a good lot and very nice quality, the winners were well laced on good sound blue-ground colour, with good head qualities; in fact, the classes were full of quality, although a few chickens were not fully developed.

Leghorns as usual made a very fine display. Probably no breed has maintained its popularity over so long a period, and the display at this Show is invariably a treat to Leghorn breeders.

This year the classes were well supported and the quality, in view of an unusual bad rearing season, was quite up to the average.

The Whites and the Browns made the best show, and in connection with the former it was to be observed that there was a general improvement in type, breeders obviously paying more attention to this very necessary quality than has been evident for several years. The Medal for the best in this section went to the winning White Cockerel which was shown very fit.

Brown Cockerels, too, were very interesting, showing distinct improvement in colour, the breed having improved in regard to white in flights and the proper shade of top colour and hackle striping. Neither the White nor the Brown Pullets were quite so good as we have seen in past years, this being particularly true of the Browns both in regard to colour and head points.

Blacks were somewhat disappointing in quality, and on this account the Judge had some difficulty in sorting the winners out, no birds being particularly outstanding with the exception of the winning Pullet, which stood well away. There was an improvement in type, and it is pleasing to observe that increasing length of limb with which the breed was threatened some years ago is now being discouraged by breeders in favour of the true Leghorn of horizontal body-carriage and bold front, with an active and sprightly appearance.

The off colours—Cuckoos, Piles, Duckwings, Blues and Exchequers are still much behind the other colours, though there were individual specimens of outstanding merit.

Plymouth Rocks as usual made a great show, and it is surprising to find how the Buffs have become to-day more popular than the Barred ones.

Buffs with 41 Cockerels and 25 Pullets was a wonderful record, and the type and colour in this variety showed great improvement.

The Rock is a good all-round breed that has stood the test of time and still maintains its popularity, both at home and abroad.

The Barred Cockerels as a whole were not ready, many chickens not being feathered up properly.

Some good Whites were shown in the Any Other Colour Class.

Sicilian Buttercups with only 31 entries in two classes, did not make a great display, and the breed to-day seems somewhat at a standstill. The winners were good colour and typical, and with their quaint combs attracted much attention from the spectators.

Silkie made two good classes and are still very popular, with their black eyes, their black skins and their beautiful white plumage.

The quality was up to the average and type was better, the long-legged birds being absent, but we must keep up the size in this breed, they are not Bantams.

Indian Game came up well as usual and the two classes were equal to anything seen at this Show in past years, not only in numbers but in quality, the winning Cockerel being a grand specimen all round.

Campines had not such a large entry as usual, and the quality was not so good as we have seen in past years.

The Any Other Variety Classes are always interesting at this Show, and as usual contained a very varied collection of breeds. In Cockerels the winner was an Old English Pheasant Fowl that was much admired; second a reachy Modern Game and third a White Malay. In the Pullets, competition was keener, and here a Modern Bronze-red Game Pullet won, and she was well worth her position. Second was a beautiful Modern Langshan, and third another Old English Pheasant Fowl.

The Breeding Pen Classes were a great collection, and a section from which the novice receives much instruction in seeing trios together in one pen. The class for Plymouth Rocks, Wyandottes or Orpingtons had 23 entries, and here the winning trio of Buff Orpingtons was one of the finest trios of the breed ever shown from one yard; they stood right away. The second trio of White Wyandottes were very nice, and the third trio of Gold Wyandottes were very typical and good colour.

In the Any Other Variety we found 39 entries entered, and here a pretty trio of Old English Pheasant Fowls were first, but they were closely pressed by the second prize-winners, which were lovely speckled Sussex, and the third Indian Game, and the Reserve Modern Game; in fact it was a great class and competition was very keen.

Waterfowl had an extended classification and a good entry and some grand quality was to be seen.

Rouens were well up to the standard of previous years and had 21 entries. Aylesburys were hardly so good as we have seen here, but they are still a very popular variety for which there is a good demand.

Runners were a strong class, type good and colour excellent, except in Fawn and Whites which had poor markings, also several whites were sappy, moulty and yellow in feather. Blacks have advanced wonderfully, although some still show a considerable amount of white and savour too much of the Black East Indian type.

Buff Orpingtons received a good entry, and Khaki Campbells seem to be becoming more popular, as testified by the improved quality to be seen. Black East Indians were a pretty lot, and the Any Other Variety Class contained 23 entries and the winners were all Drakes. The winner was a large Muscovy of nice shape and colour, second a shapely Cayuga of rich lustrous colour, and third a good Pekin.

Geese had 37 entries in the two classes and made a nice show, the winning Toulouse taking the Medal for the best.

Turkeys made a good section and entries came up well. The Bronze were the strongest entry, but the Any Other Colours contained some lovely Whites.

Bantams made a strong section and as usual formed a great attraction for the general public and the children. The quality was very good and many of them were the exact miniatures of the larger breeds.

Modern Game again had eight classes and they contained a grand entry and were well judged, the Medal for the best going to a beautiful Birchin Pullet, without doubt one of the best seen for many years.

Old English were strong, and here the winning Spangle cock took the Medal.

Variety Bantams came up well, especially the Black Rosecombe Cockerels, the winner here taking the Medal for the best Variety Bantam Cock. Minorca Bantams were a new class and filled well with typical birds.

Wyandotte Bantams were a good entry, the winning Partridge Hen taking the Medal for the best Variety Bantam hen.

Indian Game Bantams came up very strongly, and the quality was very good.

Any Other Variety Classes contained 45 birds in two classes, and many varieties were to be seen here. A lovely Scots Grey won the Cocks and a nice Dark Brahma the Hens, and no doubt these winners were well selected.

THE PIGEON SECTION.

By W. S. BROCKLEHURST.

THE forty-sixth Annual Show was held on October 21st, 22nd, 23rd, and 24th, 1924, at the Royal Agricultural Hall, London, and was again a great success. The entries were 87 down on the 1923 Show's total, there being, however, a very fine total of 3,028 at this year's Show, and the quality is continually improving. The same remarks were to be heard from all the judges, of the vast improvement of the birds all round, and the condition in which they were put down for their inspection—making their task a somewhat hard one, and a long morning's work, owing to the unavoidable limited space at the disposal of the authorities for staging the exhibits. Notwithstanding all the grumbling from exhibitors about the way the birds have to be staged on account of this limited amount of space at the disposal of the Pigeon Committee, the entries still come in and keep well about the pre-war average, which says much for the popularity of this old fixture amongst pigeon fanciers.

I regret to have to report that the Poultry and Pigeon Sections of the British Dairy Farmers' Association have lost their much esteemed and respected Chairman, Mr. Palgrave Page, who retired from that office after having held same for 26 years, and who made this section of the Show what it now is, the most popular Show in the Fancy. It was always an honour and pleasure to serve and work under him; personally, I have had that honour and pleasure of serving under his chairmanship on the Poultry and Pigeon Committee for the last 16 years, and before that for several years as one of the Pigeon Stewards at the Annual Show at the Agricultural Hall, and I much appreciate the great honour the members of the Poultry and Pigeon Committee have done me in electing me to take his place; a no easy matter to follow such an able Chairman as Mr. Palgrave Page, but I hope, with the help of the members of the Committee, to keep the high reputation of that body's work in the Fancy up to the same standard of efficiency as in past years.

At a meeting of the Poultry and Pigeon Committee, held at the Dairy Show, a small presentation was made to Mr. Palgrave Page on his retirement from the Chairmanship of that Committee by the members, as a small token of their esteem, and as a mark of appreciation for his courtesy and successful work whilst acting as their Chairman for so many years. It is very gratifying to note that Mr. Palgrave Page's valued advice will not be lost to that Committee, as he has offered to be present at all times convenient, and to help in the work which is going on.

The Pigeon Section is a very popular section with the general public, which is borne out by the number of people seen in the aisles during the week enquiring and taking an interest in the winners, especially in the winners of the medals and different cups offered by the British Dairy Farmers' Association and other clubs for competition each year.

The winners of the principal trophies offered by the Association for competition this year are as follows:—

The Gold Medal for the best Pigeon in the Show, bred in 1924, was awarded to Class 38, Pen 508, Mr. F. Meyer's Young Carrier Cock. The Reserve going to Class 69, Pen 861, Mr. T. Wilkinson's Young Dragoon Hen.

The Jones' Memorial Trophy for the best old bird in the Show was awarded to Class 177, Pen 2069, Mr. Geo. H. Leech's Blondinette Cock. Reserve going to Class 29, Pen 375, Mr. H. Whitley's Norwich Cropper Cock.

The Esquilant Challenge Trophy was awarded to Class 113, Pen 1444, Mr. Robert Arkwright's English Owl. Reserve going to Class 122, Pen 1513, Mr. S. Sherwin's Turbit Cock, bred in 1923.

The Fulton Trophy was awarded to Class 169, Pen 1992, Messrs. T. and W. J. Smillies' Black Nun Cock. Reserve going to Class 87, Pen 1135, Mrs. A. E. McDougall's Long-faced Tumbler Hen.

All the above exhibitors are to be congratulated on having successfully bred a bird good enough to carry off one of the above trophies, which so many exhibitors have been trying year after year to do but without success, but with the keenness shown each year their turn will come if only they keep on putting down such exhibits as were on view from the different lofts at the last Show, and we wish them the best of luck at the next Show. Details of the various varieties are as follows:—

Fantails numbered 188 in 11 classes, a slight increase on last year's total of 180 in the same number of classes. The Whites and Saddle classes keep on improving, and are now such a good lot that it is hard to sort them out, and great care is required to select the winner. The Alfred Bates Perpetual Challenge Cup, given by the Fantail Club for the best Fantail, went to Messrs. Dukes Brothers' very fine Black, Class 8, Pen 139. The same bird also carried off the Association's Silver Medal for the best young bird of the year. There were some very fine birds to be seen in the other Colours, and the quality throughout was of the highest standard.

Pouters numbered 32 entries in four classes, an improvement of nine on last year's entries. The birds penned were of the finest quality, but of late years they have not turned up in great numbers, which is a great pity as they are of great interest to the public.

Pigmy Pouters were up on the previous year's total of 140 entries in 13 classes, as compared with 126 in the same number of classes in 1923, an increase of 14, and the two judges had a good morning's work amongst them, as the quality continues to improve each year.

The Challenge Cup offered by Mr. H. Brooks for the best Blue, Silver, or Cream Cock bred in the current year was awarded to Pen 264, Mr. Wm. Lindsay's young Cock, and a very nice pigeon full of quality. The same owner carried off the Association's Silver Medal for the best young Pigmy bred in 1923.

The Richard Foster Challenge Cup for best Red or Yellow Pied Cock went to Pen 309, Mr. A. Leigh's young Cock, and the same exhibit was also awarded the Pigmy Pouter Club's Challenge Cup, another bird of very nice type and quality.

Norwich Croppers were also up on last year's total, there being 96 entries in five classes, as compared with 77 in the same number of classes the previous year. They were all good classes. The Blues are, undoubtedly, in advance of the other colours; the Blacks are showing a great improvement, and some grand shaped birds were to be seen in the Any Other Colour Young Class. Mr. H. Whitleys' Pen 375 was Reserve for the Jones Trophy, a most typical pigeon. Mr. H. Whitley was also the winner with Pen 407 of the Association's Bronze Medal for the best young bird.

Carriers numbered 76 in seven classes, an increase on last year's entry of 14 in the same number of classes, which is quite good, but the quality in the old classes is not what it used to be, and few old Carriers of the grand, sound stamp are to be seen to-day. The young birds don't seem to develop into the same grand old birds that were to be found a few years ago. I am not referring to the soft, watery-eyed birds, but to the sound eyes and good shaped, filled-in wattles with the fine upstanding carriage. The Carrier Club's Challenge Cup for the best old bird went to Class 34, Pen 458, Mr. F. W. Dear's Cock, the same exhibit taking the Association Bronze Medal for best Carrier. The Carrier Club's Challenge Cup for the best young bird was awarded to Class 38, Pen 508, Mr. F. Meyer's beautiful young Black Cock, which was also awarded the Association's Gold Medal for the best young bird in the Show, and undoubtedly should have carried off the Association's Bronze Medal for best Carrier in Show, it being a grand young pigeon of great promise.

Barbs had two classes as last year, with only 16 entries, as compared with 23 in two classes last year. In the old class the eight entries were very good and of excellent quality, but the young ones were a poor lot compared with the young birds shown last year.

Dragoons, as usual, turned up in force, and were the largest section in the Show with 400 entries in 31 classes, as compared with 442 entries in 30 classes in 1923, a decrease of 42 entries and one more class. The Judges remarks on the Adults and Yearlings are as follows:—Collectively speaking, the standard of merit was satisfactory, with a marked improvement in the size and type of Blues, Chequers, Red Chequers predominant, perhaps, maintain tyre and quality, whilst Grizzles were an even lot, with difficulty to find a specimen of orthodox colour throughout. In Yellows some good birds were on view, but speaking as an exhibitor and close student of this

colour for some thirty years, am disposed towards the belief that much in general show properties has been sacrificed to straightness of face. Few, indeed, of colour can be found with a well-broken peg-shaped wattle as to colour, so varying in this respect are many of those finding premier awards, that there seems to be a wide divergence of opinion as to what is and what is not in conformity with the requirements of the standard. Better Reds I have seen. Whites provided a good entry, many attractive birds being staged. In the 1924 classes the quality of exhibits was well up to the average; the greatest improvement was noticed in the Blues, that colour securing both the much-coveted Cotton Cups. Some very nice young White Hens were seen.

The George Cotton Challenge Cup for the best young Cock was awarded to Class 63, Pen 750, Mr. H. S. Whitehead's young Blue Cock, the same pen taking the Association's Silver Medal.

The George Cotton Challenge Cup for the best young Hen was awarded to Class 69, Pen 861, Mr. T. Wilkinson's Blue Hen, the same owner winning the Association's Silver Medal and Reserve for the Gold Medal for best young bird in the Show, a very beautiful and well-balanced pigeon. The Hewitt Challenge Cup for best White Dragoon was awarded to Class 74, Pen 940, Mr. Cecil Cooper's young White Hen, who also took the Association Bronze Medal. The W. Bastrard Challenge Cup for best Yellow or Red was awarded to Class 58, Pen 695, Messrs. Stuckbery and Tripp's Yellow Cock.

Short-faced Tumblers.—In this section 68 entries were forthcoming in five classes, two classes had to be cancelled as against 67 entries in seven classes last year, a somewhat better result as far as competition was concerned, and the quality was quite up to the average. In the Almond and Any Other Colour Classes the birds were a very good lot, and the young classes were full of promise; this Show being a little early for this variety, several of the birds were not in the best of condition. The Association's Silver Medal for best young bird was awarded to Class 81, Pen 1010, Mr. Allen Wilson's young Cock.

Long-faced Tumblers.—In this section there were 378 entries in 27 classes, as against 347 in the same number last year, a nice increase of 31 entries, which were made up as follows:—Selfs had 249 entries in 16 classes, an increase of three on last year's total in the same number of classes, and the Any Other Variety Long-faced Tumblers had 129 entries in eleven classes, as compared with 137 entries in 13 classes last Show. The Self Classes were again a very strong feature at the Dairy Show, with a very good average and quality, and were a very nice collection. The Reds had improved a good bit, but the most noticeable improvement was to be seen in the Blues and Chequers as regards Long-faced Tumbler properties. The Association's Silver Medal went to a very nice Red, Class 87, Pen 1135, Mrs. A. E. McDougall's. In the Any Other Variety Tumbler Classes the Judge says, were quite a good lot, but personally did not think

they were up to the usual quality generally seen at this classic, the cause of which may be put down to a very disappointing breeding season. The Black Balds are keeping up to standard requirements much better than the other colours.

The Young Mottle Class was very good, especially the winning young Black Hen.

The Muffed Tumblers showed much more all-round improvement than did the clear-eyes.

The Young Red Self Hen that was awarded the Silver Medal was also Reserve for the Fulton Trophy.

English Owls.—The entry this year was very considerably down on last, there being only 77 entries in seven classes, as compared with 100 in the same number of classes last Show. The Adult Cock and Adult Hen Classes were well supported, and the winners were nice all-wing quality birds. The Yearling Cock Class was one of the best classes, and the winners possessing very good Owl properties. The Yearling Hens were a very poor lot, except the winner, which was a good all-round typical specimen of the breed. Young Blues were strong in numbers, but the class all round very moderate, the first and second prize-winners standing clean away. Young Silvers were very disappointing and a very moderate lot. The young Off-Colours were the most level lot of the young classes, and the first and second prize birds were two of the best Off-Colours seen for some time. There is still a tendency even amongst the winners for too large bodies and too much feather. Taken generally, they are much healthier, and were shown in much better form than usual. The Association's Bronze Medal was awarded to Class 113, Pen 1444, a very good Pied, the same bird winning the Esquilant Trophy.

Foreign Owls.—Following the very poor response to the classification put in last year, the Association only put in two classes this year, and as the entries were so poor again both classes were cancelled, and it looks as if this variety will disappear from the Dairy Schedule in future if the Foreign Owls fanciers don't wake up.

Turbits had 71 entries in eight classes, as against 74 in eight classes last year, a slight decrease, and were fairly well represented in entries, and the classes contained some good specimens. The general condition of the birds was quite good. The young classes were particularly good, especially the Young Black or Dun Cock and Black or Dun Hen, which showed exceptionally good type and quality. The Association's Bronze Medal went to the Esquilant Trophy Reserve birds, Class 122, Pen 1513, Mr. S. Sherwin's Young Cock.

Archangels numbered 58 entries in four classes, an increase on last year's total of 47 entries in the same number of classes, and the four classes were a wonderfully good collection for winners of bronzing, and solidity of colour being very marked in the winner, especially was this noticeable in the winner of the Adult Cock Class, who for profusion and brilliancy of lustre, evenness of bronze, and solidity

of colour very nearly approached perfection. Generally speaking, the Cocks were better in quality than the Hens; some of which were rather inclined to grey ticking on the back; this is a fault that breeders would do well to watch carefully. Taking the section on the whole, they were as good a lot as have been staged at the Dairy Show for some time. The Bronze Medal of the Association was awarded to Class 128, Pen 1574, Mr. H. Bailey's young Cock.

Modenas again made a very fine display, and a wonderful collection of these most attractive pigeons were on view, there being only two entries short of last year's total in the same number of classes. This year there were 352 entries in 34 classes, which was made up of 199 *Gazzi* in 18 classes and 153 *Schietti* in 16 classes; last year there were 222 *Gazzi* in the 18 classes and 132 in the *Schietti* and *Magnani* Classes.

The *Gazzi* Classes were judged by Mr. J. N. Atkinson, who reports the quality all round as better than last year. The Young Blue Cocks Class were best in quality, but the Blue Hens were not up to the usual excellency; the Cup winners and Medal winners were very good birds, and mark a distinct advance in the quality of this variety.

Mr. H. Seaton judged the *Schietti* and *Magnani* Class, and reports great improvement in the Red Barred Classes for type and quality over previous years; there is still much more room for improvement in the *Argents*.

The winners of the *Modena* Club Cup and Association's Silver Medals were as follows:—

Cup for the Best Old *Gazzi* Cock, Pen 1601, Class 130, Mr. W. S. Brocklehurst—Blue Cock, last year's Association Gold Medal winning young pigeon.

Cup for the Best Old *Gazzi* Hen, Pen 1687, Class 137, Mr. W. F. Holmes—Black Hen.

Cup for the Best Old *Schietti* Cock, Pen 1801, Class 148, Mr. W. S. Brocklehurst—Blue Barred Cock.

Cup for the Best Old *Schietti* Hen, Pen 1815, Class 149, Mr. W. F. Holmes—Barred Hen.

Cup for the Best Young *Gazzi* Cock, Pen 1662, Class 134, Mr. A. C. Tattersall—Tri-coloured Cock.

Cup for the Best Young *Gazzi* Hen, Pen 1651, Class 133, Mr. A. C. Tattersall—Young Blue Hen.

Cup for the Best Young *Schietti* Cock, Pen 1877, Class 154, Mr. A. C. Tattersall's Young Red Laced Red Cock.

Cup for the Best Young *Schietti* Hen, Pen 1838, Class 151, Mr. W. S. Brocklehurst—young Blue Barred Hen.

The Association's Silver Medal for the best *Gazzi* bred in 1924 was awarded to Mr. A. C. Tattersall's young Blue Hen, Pen 1651, Class 133.

The Association's Silver Medal for the best *Schietti*, bred in 1924, was awarded to Mr. A. C. Tattersall's young Red Laced Red Cock.

Jacobins had four classes this year as against six last, two old and two young, but the two old classes had to be cancelled, and the two young classes only brought together 13 entries of very poor quality, as compared with 52 entries in six classes last year. Undoubtedly the Dairy Show is much too early in the year for Jacobin fanciers, their birds not being advanced enough by that date.

Nuns numbered 70 entries in five classes, as compared with 58 entries in the same number of classes, an increase on last year and the previous year also. The quality throughout all the classes was good, and they are being shown in better condition than usual, and the birds are being shown in a more natural state than in past years. The Association's Bronze Medal for the best young bird was awarded to Class 169, Pen 1992, Messrs. T. and W. J. Snillie's young Black Cock, the same exhibit winning the Fulton Trophy, a good all-wing pigeon, and showing faultless condition.

Oriental Frills numbered 139 entries in 14 classes, two more than last year in the same number of classes. The Judge reported on this section as follows:—That undoubtedly this section maintained its reputation for being one of the most attractive varieties in the Show, and the various classes contained some really wonderful specimens of this charming variety. The Oriental Turbits included some wonderful headed specimens, full of type and quality. Turbit were a grand collection, containing many fine specimens of the various colours, among which the Red, bred 1924, calls for special mention, being one of the best specimens of this rare colour seen for years, and was the Reserve bird for the best Frill bred 1924. The Black or Dun Blondinettes were without doubt the best classes of the Frill Section, and contained some almost perfect specimens, among which calling for special notice was the Black Laced Blondinette Adult Cock, which was awarded the Cup for the Best Adult Oriental, and also secured the Jones Trophy for the best Adult Pigeon in the Show. The Any Other Colour Blondinettes included some beautifully laced specimens, many of which were good enough to win the first prize, a very grand lot.

Sabinettes were particularly good, one pleasing point being most specimens with good "tail spots."

The Sulphurette winning its class stood out as being one of the best specimens of this difficult colour to produce seen for several years.

Bluettes and Silverette were again good and very even in quality, and difficult to separate as regards prizes. The 1924 Bluette being a very charming specimen of the barred variety, and was awarded the Special for the best Oriental Frill bred in the year.

The Oriental Frill Club's Challenge Cup for the best Oriental Frill was awarded to Class 177, Pen 2069, Mr. Geo. H. Leech's Blondinette, the same bird winning the Jones Trophy for the best old bird in the Show, and the Association's Silver Medal was awarded to Class 186, Pen 3171, Mr. T. Williamson's young Bluette.

Magpies numbered 46 entries in four classes, as compared with

40 entries in six classes last year, being a better average. The Black Classes were well filled, and quite up to the average, as was the Red or Yellow Class, and the type is decidedly improving. The Any Other Colour Class was poor in numbers and quality. The Association's Bronze Medal was awarded to Class 189, Pen 2207, the second prize in the Any Other Colour Class, Mr. S. R. Ling's young entry.

Marthams had one class provided for this variety, and brought together 11 entries, as compared with eight entries in the one class last year. The type in this breed is getting more uniform.

Antwerps.—These classes showed a slight decrease on last year's entry, there being only 56 entries in six classes, as compared with 68 entries in the same number of classes last year. The young classes came up the best, and some very promising young birds were on view, and were in very good condition as compared with the other birds. The Association's Bronze Medal was awarded to Class 196, Pen 2265, Mr. C. Mawson's very nice young Cock.

Show Homers numbered 167 entries in 12 classes, as compared with 149 in the same number of classes last year, a nice increase of 18 entries. The Judge's report on these classes is as follows: The quality in the adult classes was remarkably good, nearly all the best birds in the fancy being present. The Dun Chequer Hen which won the trophy is a bird of exceptional merit, being as near perfection as we can hope to get. She is a balanced pigeon, a rarity in the variety. Birds bred in 1924 were, with a few notable exceptions, below the average, only four young Black Chequer Cocks standing right out, but they will have a hard fight next year against the first and second adult Cocks. The off-colours are disappointing. There is a great lack of uniformity in type, which makes it impossible for a Judge to appear consistent. The United Show Homer Club's Challenge Cup was awarded to Class 201, Pen 2338, Mr. G. R. Hartley's Dun Chequer Hen, and the Association's Silver Medal was awarded to Class 204, Pen 2364, Mr. J. W. Aisey's young Blue Cock.

Racing Pigeons were down on last year's entry, no doubt owing to the very bad season experienced during the racing season, many breeders having reported very heavy losses to their young birds owing to the very bad stormy weather. This year's entries numbered 249 in the six classes, as compared with 304 in six classes last year. The Judge reports that the standard of merit in all classes was well maintained, speaking as a Judge for the fourth time, and as a constant visitor to the Show for nearly 20 years. There is indeed in some respects a marked improvement in the average type of bird now shown for while still handsome in appearance, they approximate much more closely than they did some years ago to the genuine type of a bona fide racing pigeon, bred for work primarily rather than for actual show. They are indeed the "utility" pigeon of the Show, and that is as it ought to be. I understand that Colonel Osman's £10 10s. Challenge Cup has now been won outright, but I have certainly no

regrets personally as to the decision, as the winning pigeon was a bird of absolutely exceptional merit, and without doubt the best racing pigeon seen for some time.

The Victory Challenge Cup was awarded to Class 210, Pen 2458, Mr. Leonard Nutter's young Cock, having flown at least 200 miles, and the same bird also carried off the Association's Silver Medal.

Exhibition Flying Homers only numbered 65 in six classes, two classes being cancelled, as compared with 97 in the eight classes last year. A marked feature of the birds collectively in this section showed a deterioration in both quality and type as compared with previous years, and require a lot more finish.

Plumigans.—Four classes for this variety were put in this year as compared with two last, with the result that two had to be cancelled. This year's entries numbered 30 in the two classes, as compared with 21 in the previous year. They were very even in both classes; they are improving fast, especially in colour of eye, and shape of skull, few of the short-headed type being penned.

Ice.—This one class only brought eight entries, as compared with 10 last year, and were a most charming lot, and were very good in colour and markings.

Runts.—An increase of four entries in this one class this year, there being 16 birds penned, and these were far better in feather than is usually seen.

Mondains.—These two classes produced 14 entries, as compared with 16 entries last year, and were a good table lot, very fine in size, with deep, long breasts carrying plenty of flesh, and all in good condition. There is still a variation of type.

Holle Croppers.—Two classes were put in this year for the first time, and produced a very good entry of 25 in the two classes, and were acknowledged to be the two best classes yet seen in this country, the quality being equal to that seen in Holland, the home of this bird.

Swifts.—This one class only brought together eight entries; last year was the first time this variety had a class to itself, and had 11 entries. Some very beautiful coloured birds were to be seen. We hoped for a better response in putting on these classes for Swifts and Ice. It looks as if they will have to go back into the Any Other Variety Classes.

The Any Other Variety Classes produced 35 entries in two classes, as compared with only 13 entries in the two classes last year, a very good increase of 22, and were a very fine collection, and contained many birds seldom seen in our English Shows, and most excellent examples of such breeds as Scandarvons, Spot Fancies, Tuppilers and Swabians, Tape Runts, Polish Laced Lynx, Trumpeters, Fairy Swallows, and Larks.

Selling Classes again numbered eight classes with a total of 129 entries, a drop on last year's entries, the eight classes totalling 138

entries last year, and a few very good and cheap birds changed hands. The quality in these classes was good, exhibitors realising the necessity of having to pen a very good bird to win in these classes with the present-day competition.

In conclusion, I can only repeat that the Show was again a great success, and I have to thank my Assistant Steward, Mr. H. J. Heppel, and my other Stewards, who assisted me to carry through another Show so successfully at the Agricultural Hall, London, and, I hope, to the entire satisfaction of all who exhibited at the 1924 Show.

My best thanks are due to those good fanciers, acting as my Stewards and Assistant Stewards, who gave their services voluntarily, and for the smooth and splendid way they worked to get all the birds penned in time for judging, and packed at the close of the Show in good time, and for the very careful way the handling was carried out, which all goes to make a successful Show. My thanks are due to our Secretary, Assistant Secretary, and staff for all their assistance and kindly consideration during the Show.

AWARD OF PRIZES, DAIRY SHOW, 1924.

DAIRY COWS AND HEIFERS IN MILK.

THE "BLEDISLOE" CHALLENGE TROPHY (presented by LORD BLEDISLOE, K.B.E.), awarded to the Ayrshire Cattle Herd Book Society for the Best Exhibit of good all-round Dairy Cows. The Cows competing for the Trophy were the first six in the Breed Milking Trials, and were considered by the Inspection Judge to be typical specimens of the Breed.

THE "THORNTON" CHALLENGE CUP (presented by Messrs. JOHN THORNTON & CO.), for the Best Group of three Pedigree British Friesian Cows and/or Heifers upon Inspection only, awarded to Denis Aldridge, for "Merry Maid 5th," "Watercreek Hylda 2nd," and "Barrington Victoress."

THE "THORNTON" CHALLENGE CUP (presented by Messrs. JOHN THORNTON & CO.), for the Best Group of three Pedigree British Friesian Cows and/or Heifers upon Inspection only, awarded to A. & J. Brown, for "Hedges Banattaw," "Hedges Albert's Garter," and "Hedges Dairy Girl."

SPECIAL PRIZE of £10 (offered by Mr. ROBERT L. MOND, J.P.), and SECOND PRIZE of £5 (offered by the COUNTESS DE LA WARR), for Two Animals, the Progeny of any particular Bull, awarded respectively to Major C. R. Dudgeon, for "Cargen Holm Elfreda 2nd" and "Cargen Holm Maud 18th" (Ayrshires), and Lord Rayleigh, for "Terling Torch 13th" and "Terling Skylark 14th" (British Friesians).

Class 1.—DAIRY SHORTHORN COW.—Entered in or eligible for Coates's Herd Book, or its pedigree sent for such entry previous to the Show, born on or previous to 1st August, 1919.—*First Inspection Prize* (£10), to D. Aldridge for "Watercreek Hylda 2nd." *Second Inspection Prize* (£5), to D. Aldridge, for "Barrington Victoress." *Third Inspection Prize* (£3), to A. R. Fish, for "Penwortham Bonny Lady." *Fourth Inspection Prize* (£1), and *Extra Inspection Prize* (£5), to D. Aldridge for "Merry Maid 5th." *First Milking Trial Prize* (£12) and the "Desborough" Cup, to Major S. P. Yates, for "Clara's Beauty." *Second Milking Trial Prize* (£6), to Major S. P. Yates, for "Bright Darling." *Third Milking Trial Prize* (£3 10s.) to J. G. Peel for "Watercreek Rose."

Class 2.—DAIRY SHORTHORN COW.—Entered in or eligible for Coates's Herd Book, or its pedigree sent for such entry previous to the Show, born after 1st August, 1919, and previous to 1st August, 1921.—*First Inspection Prize* (£5), equal. *First Milking Trial Prize* (£4 15s.) and the Shorthorn Society's Prize (£10) to E. Ezra, for "Thurnham Ringlet 14th." *Second Inspection Prize* (£3) to The Earl of Sandwich, for "Hinchbrook Harebell." *Third Inspection Prize* (£2) and equal *First Milking Trial Prize* (£4 15s.) to T. P. Preece, for "Pencoyd Blanche 2nd." *Fourth Inspection Prize* (£1) to R. Tustian for "Primula 173rd." *Third Milking Trial Prize* (£2 10s.) to T. L. Martin for "Comely Maid 4th."

Class 3.—DAIRY SHORTHORN HEIFER.—Entered in or eligible for Coates's Herd Book, born on or after 1st August, 1921. *First Inspection Prize* (£5) to R. Tustian, for "Greattew Swanne." *Second Inspection Prize* (£3), *First Milking Trial Prize* (£6), and the Shorthorn Society's Prize (£5) to Viscount Feilding, for "Sudborough Ringlet." *Third Inspection Prize* (£2) to Capt. T. Allen-Stevens for "Rossall Seraphina 9th." *Fourth Inspection Prize* (£1), *Second Milking Trial Prize* (£3 10s.), and the Shorthorn Society's Prize (£5) to J. O. Burchnall, for "Flamville Carrie."

Class 4.—DAIRY SHORTHORN COW.—Not eligible for Classes 1 or 2.—*First Inspection Prize* (£10) to The Express Dairy Co., Ltd., for "Freda." *Second Inspection Prize* (£5), *First Milking Trial Prize* (£12), *Extra Inspection Prize* (£5), and the Dairy Shorthorn Association's Prize (£10) to A. B. Croxon, for "Spot." *Third Inspection Prize* (£3) to G. Twentymann, for "Ruby." *Fourth Inspection Prize* (£1), and *Second Milking Trial Prize* (£6) to W. H. Nelson, for "Lady Wilson 3rd." *Third Milking Trial Prize* (£3 10s.) to F. Chapman, for "Dorothy."

Class 5.—DAIRY SHORTHORN HEIFER.—Not eligible for Class 3, born on or after 1st August, 1921. *First Inspection Prize* (£5) and *First Milking Trial Prize* (£6) to F. Chapman, for "Madge." *Second Inspection Prize* (£3) to J. Pierpont Morgan, for "Daphne."

Class 6.—LINCOLNSHIRE RED SHORTHORN COW.—Entered in or eligible for the Herd Book of the Lincolnshire Red Shorthorn Association.—*First Inspection Prize* (£10) to Sir A. G. Weigall, K.C.M.G., for "Langford Damsel 15th." *Second Inspection Prize* (£5) and *Third Milking Trial Prize* (£3 10s.) to S. Reading, for "Langford Queen 7th." *Third Inspection Prize* (£3) and *Extra Inspection Prize* (£5) to J. Evens & Son, for "Burton Ruby 23rd." *First Milking Trial Prize* (£12) to J. Evens & Son, for "Burton Ruby Spot 14th." *Second Milking Trial Prize* (£6) to B. G. Bowser, for "Scothern Mystic."

Class 7.—LINCOLNSHIRE RED SHORTHORN HEIFER.—Entered in or eligible for the Herd Book of the Lincolnshire Red Shorthorn Association, born on or after 1st August, 1921.—*First Inspection Prize* (£5) and *Second Milking Trial Prize* (£5) to S. Reading, for "Langford Damsel 21st." *Second Inspection Prize* (£3) and *First Milking Trial Prize* (£8 10s.) to S. Reading, for "Langford Damsel 19th." *Third Inspection Prize* (£2) and *Third Milking Trial Prize* (£2 10s.) to R. J. Clark, for "Sharnford Lady."

Class 8.—BRITISH FRIESIAN COW.—Entered in or eligible for the Herd Book, born on or previous to 1st August, 1919.—*First Inspection Prize* (£10) and *Extra Inspection Prize* (£5) to G. Holt-Thomas, for "Beebles Peggotty." *Second Inspection Prize* (£5) and *First Milking Trial Prize* (£12) to A. & J. Brown, for "Hedges Banattatwo." *Third Inspection Prize* (£3) to Lt.-Col. J. F. N. Baxendale, for "Froxfield Cowslip." *Second Milking Trial Prize* (£6) and the "Morrison" Challenge Cup to G. Holt-Thomas, for "Blackmore Bna 2nd." *Third Milking Trial Prize* (£3 10s.) to Lord Rayleigh, for "Terling Torch 13th."

Class 9.—BRITISH FRIESIAN COW.—Entered in or eligible for the Herd Book, born after 1st August, 1919, and previous to 1st August, 1921.—*First Inspection Prize* (£5) to A. & J. Brown, for "Hedges Albert's Garter." *Second Inspection Prize* (£3), *First Milking Trial Prize* (£6) and the "Shirley" Challenge Cup to W. & R. Wallace, for "Saturn May 2nd." *Third Inspection Prize* (£2) to W. & R. Wallace, for "Knebworth Ynte's Marigold." *Second Milking Trial Prize* (£3 10s.) to Lord Rayleigh, for "Terling Skylark 14th." *Third Milking Trial Prize* (£2 10s.) to E. Furness, for "Hamels Beryl."

Class 10.—BRITISH FRIESIAN HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First Inspection Prize* (£5) and *Second Milking Trial Prize* (£3 10s.) to P. Griffiths, for "Tyddyn Beautiful." *Second Inspection Prize* (£3) to A. & J. Brown, for "Hedges Dairy Girl." *Third Inspection Prize* (£2) to V. G. Harmsworth, for "Felhampton Evangeline." *First Milking Trial Prize* (£6) to E. Furness, for "Hamels Delight." *Third Milking Trial Prize* (£2 10s.) to Lt.-Col. J. F. N. Baxendale, for "Froxfield Ruby."

Class 11.—SOUTH DEVON COW.—Entered in or eligible for the Herd Book.—No award.

Class 12.—DEVON COW.—Entered in or eligible for the Herd Book, or entered in the Supplemental Register of such Herd Book. *First* Inspection Prize (£7) and *Second* Milking Trial Prize (£5) to R. A. Clarke & Sons, for “Gentle.” *Second* Inspection Prize (£4), *First* Milking Trial Prize (£8 10s.), *Extra* Inspection Prize (£5) and the “Busk” Challenge Cup to A. T. Loram, for “Novah.” *Third* Inspection Prize (£2) to A. T. Loram, for “Petunia.”

Class 13.—RED POLL COW.—Entered in or eligible for the Herd Book, born on or previous to 1st August, 1919.—*First* Inspection Prize (£7) and *Extra* Inspection Prize (£5) to Major J. A. Morrison, D.S.O., for “Basildon Rosalind.” *Second* Inspection Prize (£4) to Mrs. R. M. Foot, for “Harefield Dawn.” *Third* Inspection Prize (£2) to Major J. A. Morrison, D.S.O., for “Sudbourne Comfit.” *First* Milking Trial Prize (£8 10s.) to W. L. Horbury, for “Sudbourne Mina.” *Second* Milking Trial Prize (£5) to M. C. Pilkington, for “Harefield Apricot 1st.”

Class 14.—RED POLL COW.—Entered in or eligible for the Herd Book, born after 1st August, 1919, and previous to 1st August, 1921.—*First* Inspection Prize (£7) to Capt. A. Richardson, for “Seven Springs Quest.” *Second* Inspection Prize (£4). *First* Milking Trial Prize (£8 10s.) and the Red Poll Cattle Society’s Prize (£5) to W. R. Glazebrook, junr., for “Ferrymore Linnet.” *Third* Inspection Prize (£2) to Mrs. R. M. Foot, for “Burley Daisy.” *Second* Milking Trial Prize (£5) to M. C. Pilkington, for “Hutton Apricot.” *Third* Milking Trial Prize (£2 10s.) to W. L. Horbury, for “Upton Molly.”

Class 15.—RED POLL HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First* Inspection Prize (£5), *First* Milking Trial Prize (£6) and Red Poll Cattle Society’s Prize (£5) to J. B. Dimmock, for “Shotford Lady Mary 5th.” *Second* Inspection Prize (£3) to J. B. Dimmock, for “Shotford Star Duchess 158th.” *Third* Inspection Prize (£2) to A. Carlyle Smith, for “Ashmoor Mischevious.” *Second* Milking Trial Prize (£3 10s.) to Capt. A. Richardson, for “Seven Springs Lucy.” *Third* Milking Trial Prize (£2 10s.) to Major J. A. Morrison, D.S.O., for “South-down Beltine.”

Class 16.—BLUE ALBION COW.—Entered in or eligible for the Herd Book.—*First* Inspection Prize (£10). *Third* Milking Trial Prize (£3 10s.) and *Extra* Inspection Prize (£5) to A. Trafford, for “Bradbourne Maid.” *Second* Inspection Prize (£5) and *First* Milking Trial Prize (£12) to E. H. Wheatley, for “Cliftonthorpe Flo.” *Third* Inspection Prize (£3) to A. Trafford, for “Bradbourne Sweet Pea.” *Second* Milking Trial Prize (£6) to Lt.-Col. W. E. Harrison, for “Poplars Beauty.”

Class 17.—WELSH BLACK COW.—Entered in or eligible for the Herd Book.—Cancelled.

Class 18.—AYRSHIRE COW.—*First* Inspection Prize (£7), *Second* Milking Trial Prize (£5), and *Extra* Inspection Prize (£5), to A. & A. Kirkpatrick, for “Anch-inbay Meg.” *Second* Inspection Prize (£4), *First* Milking Trial Prize (£8 10s.) the Barham, Spencer and Rowallan Challenge Cups and Gold Medal to Major C. R. Dudgeon, for “Cargen Holm Sally 3rd.” *Third* Inspection Prize (£2) to A. Cochrane, for “Nether Craig Fame.” *Third* Milking Trial Prize (£2 10s.) to Lt.-Col. R. E. Cecil, D.S.O., for “Netherton Queen Greenfield 4th.”

Class 19.—AYRSHIRE HEIFER.—Registered or eligible for registration with a number in the Herd Book, or in the Appendices, born on or after 1st August, 1921.—*First* Inspection Prize (£5) and *First* Milking Trial Prize (£6) to Major C. R. Dudgeon, for “Cargen Holm Elfreda 2nd.” *Second* Inspection Prize (£3) and *Third* Milking Trial Prize (£2 10s.) to Lt.-Col. W. T. R. Houldsworth, for “Garlaff Miss Elma.” *Third* Inspection Prize (£2) and *Second* Milking Trial Prize (£3 10s.) to Major C. R. Dudgeon, for “Cargen Holm Maud 18th.”

Class 20.—(GUERNSEY COW.—Entered in or eligible for the Herd Book, born on or previous to 1st August, 1919.—*First Inspection Prize* (£7) to A. Chester Beatty, for "Lizette of St. Catherine." *Second Inspection Prize* (£4), *First Milking Trial Prize* (£8 10s.) and the "Stagenhoe" Challenge Cup to J. B. Body, for "Lynchmere Rosy of Mauxmarquis 4th." *Third Inspection Prize* (£2) to A. Chester Beatty, for "Sarnia's Tulip 2nd."

Class 21.—GUERNSEY COW.—Entered in or eligible for the Herd Book, born after 1st August, 1919, and previous to 1st August, 1921.—*First Inspection Prize* (£5) to J. B. Body, for "Morland Lady Richmond." *Second Inspection Prize* (£3) and *Extra Inspection Prize* (£5) to A. Chester Beatty, for "Adding-ton Begum 4th." *Third Inspection Prize* (£2) to J. B. Body, for "Tregye Cloud." *First Milking Trial Prize* (£6) to Sir James Remnant, Bart., for "Southern Starette." *Second Milking Trial Prize* (£3 10s.) to W. F. Trumper for "Dahlia Ruby." *Third Milking Trial Prize* (£2 10s.) to C. Norman, for "Hadham Marigold 4th."

Class 22.—GUERNSEY HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First Inspection Prize* (£5) and *Second Milking Trial Prize* (£3 10s.) to Sir E. A. Hambro, K.C.V.O., for "Milton Rosey 5th." *Second Inspection Prize* (£3) to Mrs. Jervoise, for "Minnie of Carteret 2nd." *Third Inspection Prize* (£2) to A. Chester Beatty, for "Calehill Jesamina." *First Milking Trial Prize* (£6) to Sir James Remnant, Bart., for "Dene Merton Prael." *Third Milking Trial Prize* (£2 10s.) to Lady Ludlow, for "Levonias Beauty of Grand Fort 4th."

Class 23.—JERSEY COW.—English or Island Bred, entered in or eligible for the Herd Book, born on or previous to 1st August, 1919.—*First Inspection Prize* (£7) and the Blythwood Bowl to G. Cross, for "Hamletta's Queen." *Second Inspection Prize* (£4). *Second Milking Trial Prize* (£5) and *Extra Inspection Prize* (£5) to L. E. Tubbs, for "Oxlip." *Third Inspection Prize* (£2) to Mrs. H. Briggs, for "Lily of the Valley." *First Milking Trial Prize* (£8 10s.) and the "National" Milk Challenge Cup to Major H. W. Huntington, for "Marriette's Violet." *Third Milking Trial Prize* (£2 10s.) E. Birkett, for "Negundo."

Class 24.—JERSEY COW.—English or Island Bred, entered in or eligible for the Herd Book, born after 1st August, 1919, and previous to 1st August, 1921. *First Inspection Prize* (£5) to Mrs. B. Cater, for "Catrina." *Second Inspection Prize* (£3) to G. Cross, for "Roberta's Star 2nd." *Third Inspection Prize* (£2) and *Second Milking Trial Prize* (£3 10s.) to R. Bruce Ward, for "Princess Marigold." *First Milking Trial Prize* (£6) to G. Berry for "Dewberry." *Third Milking Trial Prize* (£2 10s.) to R. Bruce Ward, for "Wena's Beauty."

Class 25.—JERSEY HEIFER.—English or Island Bred, entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First Inspection Prize* (£5) and *First Milking Trial Prize* (£6) to Mrs. E. Watts, for "Essence Prize." *Second Inspection Prize* (£3) to G. Cross, for "Leighton Cowslip 5th." *Third Inspection Prize* (£2) to Mrs. Evelyn, for "Wotton Ozone." *Second Milking Trial Prize* (£3 10s.) to R. Bruce Ward, for "King Cup." *Third Milking Trial Prize* (£2 10s.) to Sir G. Stanley White, Bart., for "Hollyhock of Hollywood."

Class 26.—KERRY COW.—Entered in or eligible for the Herd Book.—*First Inspection Prize* (£5), *First Milking Trial Prize* (£6), and the British Kerry Society's Challenge Cup to J. W. Towler, for "Rosebud of Carton." *Second Inspection Prize* (£3) to L. Currie, for "Minley Trixie." *Third Inspection Prize* (£2) and *Extra Inspection Prize* (£5) to Capt. N. Zambra and C. Williamson-Milne, for "Castelough Hannah." *Second Milking Trial Prize* (£3 10s.) to Lt.-Col. J. Bennett-Stanford for "Pythouse Aggie." *Third Milking Trial Prize* (£2 10s.) to the Earl of Castlestewart for "Hathingley Happy Vesta."

Class 27.—KERRY HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First* Inspection Prize (£4) to Miss P. de B. Bowen Colthurst for "Drumgaunagh Primrose." *Second* Inspection Prize (£3) and *First* Milking Trial Prize (£5) to The Theosophical Educational Trust (Great Britain and Ireland), Ltd., for "Rebecca of Warren." *Third* Inspection Prize (£2) to Miss P. de B. Bowen Colthurst, for "Drumgaunagh Joyce."

Class 28.—DEXTER COW.—Entered in or eligible for the Herd Book.—No award.

Class 29.—DEXTER HEIFER.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First* Inspection Prize (£4), and *Second* Milking Trial Prize (£3 10s.) to Mrs. M. H. Neville, for "Creole of Copthorne." *First* Milking Trial Prize (£5) to Col. W. O. Gibbs, for "Woodleigh Daphne."

Class 30.—COW OF ANY BREED.—Milked three times daily and not eligible to compete with animals milked twice daily for Milking Trial and Butter Test Prizes and Trophies. *First* Inspection Prize (£8) and *Second* Milking Trial Prize (£5) to Lord Rayleigh, for "Terling Cherry 19th" (British Friesian). *Second* Inspection Prize (£5) and *First* Milking Trial Prize (£8) to G. Holt-Thomas, for "Beccles Silver Queen" (British Friesian). *Third* Inspection Prize (£2) and *Third* Milking Trial Prize (£2) to F. Chapman, for "Doreen" (Shorthorn).

BUTTER TESTS.

SHORTHORNS, entered in Classes 1, 2, 3, 4, 5, 6, and 7.—*First* Prize (£10 and Silver Medal) to J. Evens & Son, for "Burton Ruby Spot 14th." *Second* Prize (£5 and Bronze Medal) to S. Reading, for "Langford Queen 7th." *Third* Prize (£3) and the "George Bateman Nelson" (Coronation) Challenge Cup to Major S. P. Yates, for "Clara's Beauty." *Fourth* Prize (£2) to A. B. Croxon, for "Spot."

BRITISH FRIESIANS, entered in Classes 8, 9, and 10.—*First* Prize (£10 and Silver Medal) to Lord Rayleigh, for "Terling Skylark 14th." *Second* Prize (£5 and Bronze Medal) to G. Holt-Thomas, for "Blackmore Ena 2nd." *Third* Prize (£3) to E. Furness, for "Hamels Beryl." *Fourth* Prize (£2) to G. Holt-Thomas, for "Northdean Myrtle Queen."

RED POLLS, entered in Classes 13, 14, and 15.—*First* Prize (£5 and Silver Medal) to W. L. Horbury, for "Sudbourne Mina." *Second* Prize (£3 and Bronze Medal) to M. C. Pilkington, for "Hutton Apricot." *Third* Prize (£2) to Major J. A. Morrison, D.S.O., for "Sudbourne Comfit."

AYRSHIRES, entered in Classes 18 and 19.—*First* Prize (£5 and Silver Medal) to Lt.-Col. R. E. Cecil, D.S.O., for "Netherton Queen Greenfield 4th." *Second* Prize (£3 and Bronze Medal) to A. W. Montgomerie, for "Lessnessock Dainty Maid." *Third* Prize (£2) to Major C. R. Dudgeon, for "Cargen Holm Sally 3rd."

GUERNSEYS, entered in Classes 20, 21, and 22.—*First* Prize (£5 and Silver Medal) to J. B. Body for, "Morland Lady Richmond." *Second* Prize (£3 and Bronze Medal) to Sir James Remnant, Bart., for "Southern Starette." *Third* Prize (£2) to Sir E. A. Hambro, K.C.V.O., for "Milton Rosey 5th."

JERSEYS, entered in Classes 23, 24, and 25.—*First* Prize (£5 and E. J. C. S. Gold Medal) to R. Bruce Ward, for "Princess Marigold." *Second* Prize (£3 and E. J. C. S. Silver Medal) and the "National" Butter Challenge Cup to E. Birkett, for "Golden Raspberry." *Third* Prize (£2 and E. J. C. S. Bronze Medal) to R. Bruce Ward, for "Last of the Marigolds."

ANY OTHER BREED, entered in Classes 11, 12, 16, 26, 27, 28, and 29.—Prizes of £3 each to R. A. Clarke & Sons, for "Gentle" (Devon); A. Trafford, for "Bradbourne Maid" (Blue Albion); Lt.-Col. J. Bennett-Stanford, for "Pythouse Aggie" (Kerry); Col. W. O. Gibbs, for "Woodleigh Daphne" (Dexter). Prizes of £2 each to Lt.-Col. W. E. Harrison, for "Poplar's Beauty" (Blue Albion); The Theosophical Educational Trust (Great Britain and Ireland), Ltd., for "Buckhurst Surprise" (Kerry).

Cows entered in Class 30.—Cancelled.

BULLS.

- Class 31.—DAIRY SHORTHORN BULL.—Entered in or eligible for Coates' Herd Book, born previous to 1st August, 1922.—*First Prize* (£10) to The Earl of Bessborough, for "Bessborough Polonius." *Second Prize* (£5) to Capt. the Hon. E. A. Fitzroy, for "Foxhill Caryl." *Third Prize* (£3) to M. Fenwick, for "Foxhill Royal Pearl." *Fourth Prize* (£2) to F. S. Francis, for "Colescombe Dolphin."
- Class 32.—DAIRY SHORTHORN BULL.—Entered in or eligible for Coates's Herd Book, born on or after 1st August, 1922.—*First Prize* (£10) to Capt. the Hon. E. A. Fitzroy, for "Foxhill Telluria Boy." *Second Prize* (£5) to P. C. Vestey, for "Anderson Conjuror 9th." *Third Prize* (£3) to F. H. Thornton, for "Kingsthorpe Earl Grey 4th." *Fourth Prize* (£2) to the Earl of Sandwich, "Foxhill Wild Pearl."
- Class 33.—JERSEY BULL.—Entered in or eligible for the Herd Book, born on or after 1st August, 1921.—*First Prize* (£10) to G. Cross, for "Gloxalia's Penshurst Pilgrim." *Second Prize* (£5) to R. Bruce Ward, for "Lorimer." *Third Prize* (£3) to Mrs. Evelyn, for "Wotton Midsummer."
- Class 34.—BRITISH FRIESIAN BULL.—Entered in or eligible for the Herd Book, born on or after 1st August, 1922.—*First Prize* (£5) to F. Griffiths, for "Tyddyn Mictjes Flashlight." *Second Prize* (£3) to Mrs. S. Johnson, for "Hamels Roland." *Third Prize* (£2) to P. Bingley, for "Chipping Ongar Regalia."

SHE-GOATS.

MILKING COMPETITION FOR GOATS OR ANY VARIETY.

- The "Dewar" Challenge Cup for Goat and Goating awarded to Mrs. A. Abbey, for "Didgemere Dawdler" and "Didgemere Dream" (British Alpines).
- Class 35.—SHE GOAT qualified as "Star or 'Q' Star Milker."—*First Prize* (£6 and Silver Medal), the "Tremedda Selene" (Challenge Cup, the "Dewar" Challenge Trophy, the "Baroness Burdett-Coutts" Challenge Cup and Challenge Certificate to Mrs. Hope Maurice, for "Cintra Pepita" (British Saanen). *Second Prize* (£3) to Miss C. Chamberlain, for "Welfare of Westons" (British Saanen). *Third Prize* (£1 10s.) to Mrs. Morecom, for "Leazes Fortitude" (Anglo-Nubian Swiss).
- Class 36.—SHE GOATS not eligible for Class 35.—*First Prize* (£6 and Silver Medal) to Mrs. A. Abbey, for "Didgemere Dawdler." (British Alpine). *Second Prize* (£3) to Mrs. A. Abbey, for "Didgemere Damask" (British Saanen). *Third Prize* (£1 10s.) to Mrs. A. Abbey, for "Didgemere Delilah" (British Alpine).

INSPECTION CLASSES.

- The "Riding" Challenge Cup for best group of three Goats awarded to Mrs. A. Abbey, for "Didgemere Dawdler," "Didgemere Dream," and "Didgemere Dulcette" (British Alpines).
- Class 37.—SHE-GOAT, TOGGENBURG, entered in the Toggenburg Section of the Herd Book, or eligible for entry therein.—*First Prize* (£2 10s.), and Breed Challenge Certificate to Mrs. J. C. Straker, for "Leazes Hackee." *Second Prize* (£1 5s.) to Miss M. Henderson, for "Vertue."
- Class 38.—SHE-GOAT, BRITISH TOGGENBURG.—*First Prize* (£2 10s.) to Miss C. Chamberlain, for "Wistful of Westons." *Second Prize* (£1 5s.) to Mrs. H. Potton, for "Rayleigh Primrose." *Third Prize* (15s.) to Mrs. H. Potton, for "Rayleigh Dancer."
- Class 39.—SHE-GOAT, BRITISH ALPINE.—*First Prize* (£2 10s.) to Mrs. A. Abbey, for "Didgemere Dawdler." *Second Prize* (£1 5s.) to Mrs. A. Abbey, for "Didgemere Delilah." *Third Prize* (15s.) to Mrs. F. J. Browell, for "Ping Pong of Bashley."

- Class 40.—SHE-GOAT, SAANEN.—Entered in or eligible for entry in the Swiss or Saanen Section of the Herd Book.—*First Prize* (£2 10s.) and Breed Challenge Certificate to Mrs. H. Maurice, for "Runhilde." *Second Prize* (£1 5s.) to Miss C. Booth, for "Eftoaity."
- Class 41.—SHE-GOAT, ANGLO-NUBIAN, being any Goat entered in the Anglo-Nubian Section of the Herd Book, or eligible for entry therein.—*First Prize* (£2 10s.) and Breed Challenge Certificate to R. Turner, for "Herne Bay Princess."
- Class 42.—SHE-GOAT, ANY OTHER VARIETY, not eligible for previous Classes.—*First Prize* (£2 10s.) the British Goat Society's Challenge Cup and two Challenge Certificates to Mrs. H. Maurice, for "Cintra Pepita" (British Saanen). *Second Prize* (£1 5s.) to Miss C. Chamberlain, for "Welfare of Westons" (British Saanen). *Third Prize* (15s.) to Mrs. Morecom, for "Leazes Fortitude" (Anglo-Nubian Swiss).
- Class 43.—SHE-GOAT that is recorded under a recognised Milk Recording Society.—*First Prize* (£2 10s.) to Mrs. H. Potton, for "Rayleigh Primrose" (British Toggenburg). *Second Prize* (£1 5s.) to Mrs. H. Potton, for "Empress March" (British Toggenburg). *Third Prize* (15s.) to Mrs. H. Potton, for "Rayleigh Queen" (British Toggenburg).
- Class 44.—GOATLING, TOGGENBURG AND BRITISH TOGGENBURG.—Over one year but not exceeding two years.—*First Prize* (£2 10s.) and the "Toggenburg" Challenge Cup to Mrs. P. Wainwright, for "Fryston Senna." *Second Prize* (£1 5s.) to Mrs. A. Abbey, for "Didgemere Dame." *Third Prize* (15s.) to Miss Alexander, for "Stockwell Correpopsis."
- Class 45.—GOATLING, BRITISH ALPINE.—Over one year, but not exceeding two years.—*First Prize* (£2 10s.) to Mrs. A. Abbey, for "Didgemere Dream." *Second Prize* (£1 5s.) to Mrs. A. Abbey, for "Didgemere Dulcette." *Third Prize* (15s.) to Mrs. A. Abbey, for "Didgemere Doxology."
- Class 46.—GOATLING, SAANEN OR BRITISH SAANEN.—Over one year, but not exceeding two years.—*First Prize* (£2 10s.) and B.G.S. Bronze Medal to Mrs. H. Maurice, for "Ridgeway Russicclair." *Second Prize* (£1 5s.) to Mrs. H. Maurice, for "Ridgeway Ronwen." *Third Prize* (15s.) to Miss C. Chamberlain, for "Whim of Westons."
- Class 47.—GOATLING, ANGLO-NUBIAN.—Entered in or eligible for entry in the Anglo-Nubian Section of the Herd Book.—Over one year, but not exceeding two years.—*First Prize* (£2 10s.) to Mrs. Hendy, for "Dimples Dusk." *Second Prize* (£1 5s.) to Mrs. Hendy, for "Sadberge Cockatoo."
- Class 48.—GOATLING, ANY OTHER VARIETY.—Not eligible for previous Classes.—Over one year, but not exceeding two years.—*First Prize* (£2 10s.) to Mrs. H. Maurice, for "Ridgeway Royal" (Anglo-Nubian Swiss). *Second Prize* (£1 5s.) to Miss M. Henderson, for "Riding Topaz" (Anglo-Nubian Swiss). *Third Prize* (15s.) to Mrs. A. Abbey, for "Didgemere Ding" (Anglo-Nubian Swiss).

CHEESE.

- Class 49.—STILTON (6 Cheeses).—*First Prize* (£7) to The Colston Bassett & District Dairy, Ltd. *Second Prize* (£4) to J. M. Nuttall & Co., Ltd. *Third Prize* (£2) to Misses M. F. & J. Webster.
- Class 50.—STILTON (18 Cheeses).—*First Prize* (£10 and Silver Medal) to J. M. Nuttall & Co., Ltd. *Second Prize* (£5) to The Colston Bassett & District Dairy, Ltd. *Third Prize* (£3) to The United Dairies (Wholesale), Ltd., Harby.
- Class 51.—CHEDDAR TRUCKLES (6 Cheeses).—*First Prize* (£5) to B. Chinn. *Second Prize* (£3) to A. Stone & Son. *Third Prize* (£2) to A. H. Stevenson.
- Class 52.—CHEDDAR (4 Cheeses).—*First Prize* (£7) to A. H. Stevenson. *Second Prize* (£4) to Miss Shennan. *Third Prize* (£3) to F. G. Nurse & Son. *Fourth Prize* (£2) to J. McHarg. *Fifth Prize* (£1) to Miss M. Portch.

- Class 53.—CHEDDAR (12 Cheeses).—*First Prize* (£15 and Silver Medal), and the "N.K.J." Challenge Cup to S. & J. Hunter. *Second Prize* (£10) to F. J. Cochran. *Third Prize* (£7) to Miss Shennan. *Fourth Prize* (£5) to S. T. White. *Fifth Prize* (£3) to F. G. Nurse & Sons.
- Class 54.—COLONIAL CHEDDAR, Coloured or Uncoloured (4 Cheeses not less than 60 lbs. each).—*First Prize* (Gold Medal) and the "Hansen" Challenge Trophy to J. Sprott. *Second Prize* (Silver Medal) to H. McIntosh. *Third Prize* (Bronze Medal) to B. Avery.
- Class 55.—CHESHIRE (12 Cheeses).—*First Prize* (£15) and the "Fullwood & Bland" Challenge Cup to W. E. Moore. *Second Prize* (£10) to W. H. Hobson. *Third Prize* (£7) to P. Sumner. *Fourth Prize* (£5) to P. Fearnall. *Fifth Prize* (£3) to C. E. Parton.
- Class 56.—CHESHIRE (4 Coloured Cheeses, not less than 40 lbs. each).—*First Prize* (£7) to P. H. Walley. *Second Prize* (£4) to W. H. Hobson. *Third Prize* (£2) to E. Willis.
- Class 57.—CHESHIRE (4 Uncoloured Cheeses, not less than 40 lbs. each).—*First Prize* (£7) to P. Goodwin. *Second Prize* (£4) to W. H. Hobson. *Third Prize* (£2) to P. H. Walley.
- Class 58.—CHESHIRE (4 Cheeses, not less than 40 lbs. each).—Open only to those who have never won a Prize for Cheshire Cheese at any Show of the British Dairy Farmers' Association.—*First Prize* (£5) to C. Weaver. *Second Prize* (£3) to A. P. Sadler. *Third Prize* (£2) to J. Edwards.
- Class 59.—FACTORY.—To be manufactured at and exhibited by a recognised Cheese Factory dealing with a minimum of 500 gallons of milk daily (10 Cheeses, any Variety, not less than 28 lbs. each).—*First Prize* (£7) to The Cheddar Valley Dairy Co., Ltd. *Second Prize* (£4) to H. Edwards & Son, Ltd. *Third Prize* (£2) to C. M. Hallett. *Fourth Prize* (£1) to Cary & Grimsdell.
- Class 60.—LEICESTER (4 Cheeses). *First Prize* (£4) to J. Harrison. *Second Prize* (£3) to The British Dairy Institute. *Third Prize* (£2) to F. W. Tomlinson.
- Class 61.—LANCASHIRE (4 Cheeses).—*First Prize* (£4) to T. Sanderson. *Second Prize* (£3) to J. Whiteside. *Third Prize* (£2) to J. Cookson.
- Class 62.—DERBY (4 Uncoloured Cheeses, not less than 25 lbs. each).—*First Prize* (£4) to The Cheddar Valley Dairy Co., Ltd. *Second Prize* (£3) to F. Chandler. *Third Prize* (£2) to The United Dairies (Wholesale), Ltd., Rochester.
- Class 63.—DOUBLE GLOSTER (4 Cheeses, from 26 lbs. to 30 lbs. each, total weight not to exceed 120 lbs.).—*First Prize* (£4) to The Cheddar Valley Dairy Co., Ltd. *Second Prize* (£3) to E. F. Jones. *Third Prize* (£2) to H. H. Pickford.
- Class 64.—SINGLE GLOSTER (4 Cheeses, from 13 lbs. to 15 lbs. each, total weight not to exceed 60 lbs.).—*First Prize* (£4) to E. F. Jones. *Second Prize* (£3) to J. Taylor. *Third Prize* (£2) to The British Dairy Institute.
- Class 65.—CAERPHILLY (4 Cheeses, not exceeding 8 lbs. each).—*First Prize* (£4) to The Cheddar Valley Dairy Co., Ltd. *Second Prize* (£3) to Mrs. C. Woodward. *Third Prize* (£2) to The United Dairies (Wholesale), Ltd., Rochester.
- Class 66.—WENSLEYDALE (6 Cheeses, Blue-moulded).—*First Prize* (£4) to A. Rowntree, Son & Wright, Thoralby. *Second Prize* (£3) to The British Dairy Institute. *Third Prize* (£2) to A. Rowntree, Son & Wright, Masham.
- Class 67.—SMALLHOLDER PRESSED, Quick Ripening (2 Cheeses under 8 lbs., but over 4 lbs. each).—*First Prize* (£2) to Mrs. J. T. Fortnam. *Second Prize* (£1) to Mrs. Pyne. *Third Prize* (10s.) to Miss H. Naish. *Fourth Prize* (5s.) to Miss C. Fry.

- Class 68.—SMALLHOLDER PRESSED, Long Keeping (2 Cheeses, under 8 lbs., but over 4 lbs. each).—*First Prize* (£2) and the "Walker" Challenge Cup to Miss E. M. Madge. *Second Prize* (£1) to Miss W. Fry. *Third Prize* (10s.) to H. H. Pickford. *Fourth Prize* (5s.) to Mrs. Gadd.
- Class 69.—SMALLHOLDER PRESSED, Quick Ripening (2 Cheeses, not exceeding 4 lbs. each).—*First prize* (£2) and the "McWilliam" Silver Fruit Dish to Mrs. J. T. Fortnam. *Second Prize* (£1) to Mrs. M. Gibbon. *Third Prize* (10s.) to Miss H. Naish. *Fourth Prize* (5s.) to Mrs. Pyne.
- Class 70.—SMALLHOLDER PRESSED, Long Keeping (2 Cheeses, not exceeding 4 lbs. each). *First Prize* (£2) to Miss E. M. Madge. *Second Prize* (£1) to Miss H. Naish. *Third Prize* (10s.) to H. H. Pickford. *Fourth Prize* (5s.) to H. Stainer.
- Class 71.—SMALL CHEDDAR (2 Cheeses, made at home, from 8 lbs. to 10 lbs. each).—Open to pupils who have attended County Travelling Cheese Schools during 1923 or 1924.—*First Prize* (£3) to Mrs. Gadd. *Second Prize* (£2) to Miss E. M. Pickford. *Third Prize* (£1) to Miss E. Waters. *Fourth Prize* (10s.) to Miss M. Arnold.
- Class 72.—SMALL CHESHIRE (2 Cheeses, made at home, from 8 lbs. to 10 lbs. each). Open to pupils who have attended County Travelling Cheese Schools during 1923 or 1924.—*First Prize* (£3) to A. P. Sadler. *Second Prize* (£2) to C. W. Hobson.
- Class 73.—INTER-COUNTY COMPETITION. FOR THE BEST COLLECTION OF SMALLHOLDER CHEESES made by the persons who have received instruction in Cheesemaking at a County Council Travelling Cheese School during 1921–1924. The Head Teacher or County Organiser in each County to make the entry, which shall consist of six individual Competitors whose names shall be stated at the time of entry. Each Competitor's Exhibit shall consist of four cheeses—manufactured in Competitors' own dairies—of not more than 8 lbs. each in weight, and the number of distinct varieties and types are taken into consideration when making Awards. The prizes to be allocated: One half to the successful Competitors and one half to the County Teacher or Teachers. A Certificate of Merit will be awarded by The British Dairy Farmers' Association to each individual competitor receiving a Prize. *First Prize* (the "Inter-County" Challenge Shield and (£10)) to Berkshire:—
Miss J. Matthews (Instructress).
A. K. Barnett. S. E. Goodenough. L. Morris.
E. Davidson. M. Gower. L. Summers.
- Second Prize* (£8) to Monmouthshire:—Miss M. M. Trippe (Instructress).
Mrs. Houghton. Miss G. Jones. Mrs. Lewis.
Miss R. James. Mrs. Jones. Miss Parker.
- Class 74.—CREAM CHEESE, made from pure Cream only. No Milk or Curd to be added (6 Cheeses). *First Prize* (£1) to Miss M. B. Archer. *Second Prize* (10s.) to Miss J. MacGillivray.
- Class 75.—UNRIPENED SOFT CHEESE, other than Cream Cheese. Made direct from Milk (4 Cheeses).—*First Prize* (£1) to Mrs. Howard Palmer. *Second Prize* (10s.) to The East Anglian Institute of Agriculture.

COLLECTION OF PRODUCE.

- Class 76.—Open only to Women's Institutes. To consist of 2 lbs. Fresh Butter: one Smallholder Pressed Cheese (not over 4 lbs. any variety), $\frac{1}{2}$ lb. Cream (raw or scald) and 2 dozen Eggs. The Collection to be packed in a box suitable for transit by Parcel Post. Total weight of package not to exceed 11 lbs. *First Prize* (£5) to The Epperstone Women's Institute. *Second Prize* (£3) to The Wormbridge Women's Institute. *Third Prize* (£2) to The Longbridge Hill, Deverill & Crockerton Women's Institute.

BACON.

- Class 77.—PALE DRIED (4 hamless sides, English Shoulder Belly, of Spring or Winter Cure). Weight of side not to exceed 50 lbs.—Cancelled.
- Class 78.—PALE DRIED (4 hamless special cut sides of Spring or Winter Cure).—Weight of side not to exceed 45 lbs.—Cancelled.
- Class 79.—SMOKED (4 sides, mild cured in Wiltshire style with ham attached).—*First Prize* (£5) to M. Venner & Sons, Ltd. *Second Prize* (£3) to M. Venner & Sons, Ltd.
- Class 80.—PALE DRIED (4 sides, mild cured in Wiltshire style, with ham attached).—*First Prize* (£5) to M. Venner & Sons, Ltd. *Second Prize* (£3) to M. Venner & Sons, Ltd.
- Class 81.—TWO SIDES OF BACON SMOKED, TWO SIDES OF BACON PALE DRIED, TWO HAMS SMOKED AND TWO HAMS PALE DRIED (the weight of the sides not less than 56 lbs. and not more than 68 lbs. each; the hams not less than 12 lbs. and not more than 20 lbs. each).—*First Prize* (£7 7s.) to M. Venner & Sons, Ltd. *Second Prize* (£3 3s.) to J. R. Johnson & Son. *Third Prize* (£2 2s.) to M. Venner & Sons, Ltd.
- Class 82.—BACON PIGS (6 Pigs entered by their respective Breed Societies).—Prize (The "Whitey" Challenge Cup) and the "C. & T. Harris (Colne) Ltd." Challenge Cup to the British Berkshire Pig Society.
- Class 83.—BACON PIGS, PEDIGREE (2 pigs entered by Breeders).—Prize (The "Beale" Challenge Cup) to Major Gen. R. L. Mullens, C.B. (Large White).
- Class 84.—BACON PIGS—FIRST CROSS (2 pigs entered by Breeders).—Prize (The "Bledisloe" Bacon Challenge Cup) to Major-Gen. R. L. Mullens, C.B. (Middle White and Large White).
- Class 85.—COLONIAL (4 sides).—*First Prize* (Silver Medal) to Gunns, Ltd., Canada. *Second Prize* (Bronze Medal) to Gunns, Ltd., Canada.

HAMS.

- Class 86.—PALE DRIED (4 hams, long cut, of Winter or Spring cure, not over 14 lbs. weight).—*First Prize* (£5) to John A. Hunter & Co., Ltd. *Second Prize* (£3) to John A. Hunter & Co., Ltd.
- Class 87.—PALE DRIED (4 hams, long cut, of Winter or Spring cure, over 14 lbs. weight).—*First Prize* (£5) to Palethorpes, Ltd. *Second Prize* (£3) to John A. Hunter & Co., Ltd.
- Class 88.—SMOKED (4 hams, long cut, mild cured, not over 10 weeks cured, not over 15 lbs. weight).—*First Prize* (£5) to Palethorpes, Ltd. *Second Prize* (£3) to Cavaghan & Gray, Ltd.
- Class 89.—PALE DRIED (4 hams, long cut, mild cured, not over 10 weeks cured, over 15 lbs. weight).—*First Prize* (£5) to John A. Hunter & Co., Ltd. *Second Prize* (£3) to John A. Hunter & Co., Ltd.
- Class 90.—TWO HAMS (home cured). Open only to Members of Women's Institutes.—No entry.
- Class 91.—ONE HAM (cured in the Farmhouse or Home; dealers and professional bacon curers not eligible)—Cancelled.
- Class 92.—SELLING CLASS (2 hams, any variety).—*First Prize* (£2) to Palethorpes Ltd. *Second Prize* (£1) to Marsh & Baxter, Ltd. *Third Prize* (10s.) to John A. Hunter & Co., Ltd.

BUTTER.

- Class 93.—SLIGHTLY SALTED. Open only to farmers, their wives, sons and daughters, occupying not exceeding 100 acres, and who have never won a prize in the Butter Classes at any of the Association's Shows; 2 lbs. in 1-lb. lumps (brick shape).—*First Prize* (£3) to Mrs. Strike. *Second Prize* (£2) to Miss A. Feby. *Third Prize* (£1) to Miss M. Howden. *Fourth Prize* (10s.) to R. J. Denning. *Fifth Prize* (5s.) to Miss Sandcock.
- Class 94.—PERFECTLY FREE FROM SALT (the produce of Channel Islands Cattle and their Crosses; 2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) and British Dairy Farmers' Association Gold Medal to Mrs. J. Way. *Second Prize* (£2) to H. C. Hambro. *Third Prize* (£1) to Mrs. H. Lewis. *Fourth Prize* (10s.) to J. Pierpont Morgan. *Fifth Prize* (5s.) to S. Wiggins.
- Class 95.—SLIGHTLY SALTED (the produce of Channel Islands' Cattle and their Crosses; 2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) to Mrs. Howard Palmer. *Second Prize* (£2) to H. C. Hambro. *Third Prize* (£1) to Hon. A. P. Henderson. *Fourth Prize* (10s.) to J. Pierpont Morgan. *Fifth Prize* (5s.) to F. W. B. Gubbins.
- Class 96.—PERFECTLY FREE FROM SALT (the produce of Shorthorn and other Cattle and their Crosses (except Channel Islands and their Crosses); 2 lbs. in 1-lb. lumps, brick shape). *First Prize* (£3) to Mrs. R. J. D. Porloe. *Second Prize* (£2) to Mrs. W. Irving. *Third Prize* (£1) to Miss E. Bush. *Fourth Prize* (10s.) to Mrs. A. A. Bere. *Fifth Prize* (5s.) to J. Pierpont Morgan.
- Class 97.—SLIGHTLY SALTED (the produce of Shorthorn and other Cattle and their Crosses (except Channel Islands and their Crosses); 2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) to Capt. N. Livingstone-Learnmouth. *Second Prize* (£2) to Miss M. Howden. *Third Prize* (£1) to J. Pierpont Morgan. *Fourth Prize* (10s.) to Miss A. Bray. *Fifth Prize* (5s.) to Mrs. W. Ramshaw.
- Class 98.—FREE FROM SALT OR SLIGHTLY SALTED, at the discretion of the Exhibitor, to be made from Scalded Cream only (2 lbs. in 1-lb. lumps, brick shape).—*First Prize* (£3) to Mrs. J. Way. *Second Prize* (£2) to Miss L. T. Hare. *Third Prize* (£1) to T. R. Bolitho. *Fourth Prize* (10s.) to The Countess Temple. *Fifth Prize* (5s.) to Mrs. J. Armstrong.
- Class 99.—SLIGHTLY SALTED, in boxes of 12 bricks of 1-lb. each.—*First Prize* (£3) to The Dromkeen Co-operative Agricultural & Dairy Society, Ltd. *Second Prize* (£2) to The Kilkenny Co-operative Creamery, Ltd. *Third Prize* (£1) to The Moneymore Co-operative Dairy Society, Ltd. *Fourth Prize* (10s.) to The Shanagolden Co-operative Dairy Society, Ltd.
- Class 100.—FREE FROM SALT (24-lb. boxes of 12 rolls).—*First Prize* (£3) to The Shanagolden Co-operative Dairy Society, Ltd. *Second Prize* (£2) to The Ardagh Co-operative Dairy. *Third Prize* (£1) to The Dromkeen Co-operative Agricultural & Dairy Society, Ltd. *Fourth Prize* (10s.) to The Ballyrashane Co-operative Agricultural & Dairy Society, Ltd.
- Class 101.—MILD CURED (Slightly Salted in 24-lb. boxes of 24 rolls).—*First Prize* (£3) to The Shanagolden Co-operative Dairy Society, Ltd. *Second Prize* (£2) to The Drombanna Co-operative Creamery. *Third Prize* (£1) to The Kilkenny Co-operative Creamery, Ltd. *Fourth Prize* (10s.) to The Dromkeen Co-operative Agricultural & Dairy Society, Ltd.
- Class 102.—CURED (Slightly Salted, 28 lbs.).—*First Prize* (£3) to The Dromkeen Co-operative Agricultural & Dairy Society, Ltd. *Second Prize* (£2) to The Cappamore Co-operative Agricultural & Dairy Society, Ltd. *Third Prize* (£1) to The Herbertstown Co-operative Creamery. *Fourth Prize* (10s.) to The Kilkenny Co-operative Creamery, Ltd.

Class 103.—CURED (56 lbs.).—*First Prize* (£3) to The Dromkeen Co-operative Agricultural & Dairy Society, Ltd. *Second Prize* (£2) to The Shanagolden Co-operative Dairy Society, Ltd. *Third Prize* (£1) to The Kilkenny Co-operative Creamery, Ltd. *Fourth Prize* (10s.) to The Ballinfull Co-operative Dairy Society, Ltd.

Class 104.—FANCY OR ORNAMENTAL DESIGN (with foliage or other extraneous decoration).—*First Prize* (£3) to Miss H. M. Trenchard. *Second Prize* (£2) to Miss P. L. Mudd. *Third Prize* (£1) to Mrs. F. W. Bromfield.

Class 105.—FANCY OR ORNAMENTAL DESIGN (without extraneous decoration, adapted for table use).—*First Prize* (£3) to Miss H. M. Trenchard. *Second Prize* (£2) to Mrs. F. W. Bromfield.

COLONIAL BUTTER.

Class 106.—SALTED (one box containing not less than 56 lbs.).—*First Prize* (Gold Medal) to The South Australian Farmers' Co-operative Union, Ltd. *Second Prize* (Silver Medal) to The Bega Co-operative Creamery Co. *Third Prize* (Bronze Medal) to The Queensland Farmers' Co-operative Co., Ltd.

Class 107.—UNSALTED (one box containing not less than 56 lbs.).—*First Prize* (Gold Medal) to The Nambucca Dairy Co., Ltd. *Second Prize* (Silver Medal) to The Maryborough Co-operative Dairy Co., Ltd. *Third Prize* (Bronze Medal) to The Bendigo Butter Factory.

COLLECTION OF COLONIAL DAIRY PRODUCE.

Class 108.—To include Bacon, Dead Poultry and Eggs.—No award.

CREAM.

Class 109.—CLOTTED.—*First Prize* (£2 2s. and Silver Medal) to Mrs. E. A. Jones. *Second Prize* (£1 1s. and Bronze Medal) to W. R. Beer.

Class 110.—OTHER THAN CLOTTED.—*First Prize* (£2 2s. and Silver Medal) to Mrs. S. Sparkes. *Second Prize* (£1 1s. and Bronze Medal) to S. Reece & Sons, Ltd.

BOTTLED FRUIT, VEGETABLES, AND JAMS.

Class 111.—SIX BOTTLES OF SOFT FRUIT, of not less than 4 Varieties (Rhubarb admitted).—*First Prize* (£2) to The Horticultural College, Swanley. *Second Prize* (£1) to Mrs. C. J. Wintour. *Third Prize* (10s.) to Mrs. M. E. Parlour.

Class 112.—SIX BOTTLES OF STONE FRUIT, of not less than 4 Varieties (Apples and Pears admitted).—*First Prize* (£2) and Silver Medal to Mrs. C. J. Wintour. *Second Prize* (£1) to Mrs. D. M. Morton. *Third Prize* (10s.) to Mrs. M. E. Parlour.

Class 113.—THREE BOTTLES OF SOFT FRUIT, distinct.—*First Prize* (£1) to The Horticultural College, Swanley. *Second Prize* (10s.) to Miss E. M. Gunnell. *Third Prize* (7s. 6d.) to Mrs. M. E. Parlour.

Class 114.—THREE BOTTLES OF STONE FRUIT, distinct.—*First Prize* (£1) to The Horticultural College, Swanley. *Second Prize* (10s.) to Miss D. M. Johnson. *Third Prize* (7s. 6d.) to Mrs. M. E. Parlour.

Class 115.—SIX BOTTLES OF VEGETABLES, of not less than 4 Varieties (Tomatoes admitted).—*First Prize* (£2) to The Horticultural College, Swanley. *Second Prize* (£1) to Mrs. C. J. Wintour. *Third Prize* (10s.) to Miss E. M. Gunnell.

Class 116.—THREE BOTTLES OF VEGETABLES, distinct.—*First Prize* (£1) to The Horticultural College, Swanley. *Second Prize* (10s.) to Miss D. M. Johnson. *Third Prize* (7s. 6d.) to Mrs. R. H. Pinnock.

Class 117.—THREE JARS OF JAM (1-lb. each, dissimilar, any Variety).—*First Prize* (£1) to Mrs. J. Pantall. *Second Prize* (10s.) to Mrs. C. J. Wintour. *Third Prize* (7s. 6d.) to The Horticultural College, Swanley.

Class 118.—COMBINED EXHIBIT OF BOTTLED FRUITS, VEGETABLES, JAMS, FRUIT JELLIES, PICKLES AND CHUTNEYS, open only to Women's Institutes. To consist of 3 bottles of Soft Fruit, 3 bottles of Stone Fruit, 3 bottles of Vegetables, 3 1-lb. jars of Jam, 3 jars of Pickles, or 3 jars of Chutney. All exhibits to be shown in glass containers and to be of not less than two varieties.—*First Prize* (£5) to The Loose Women's Institute. *Second Prize* (£3) to The St. Leonards Women's Institute. *Third Prize* (£2) to The Snape Women's Institute.

HONEY, WAX, &c.

Class 119.—SIX JARS OF LIGHT-COLOURED EXTRACTED HONEY (1 lb. each approximate weight).—*First Prize* (£1) to J. Lambert. *Second Prize* (15s.) to G. C. Hill. *Third Prize* (12s. 6d.) to D. J. Griffiths and H. Aubrey. *Fourth Prize* (10s.) to W. J. Goodrich.

Class 120.—SIX JARS OF MEDIUM-COLOURED EXTRACTED HONEY, other than Heather Honey (1 lb. each approximate weight).—*First Prize* (£1) to Sir Ralph Paget. *Second Prize* (15s.) to S. Leigh. *Third Prize* (12s. 6d.) to E. C. R. White. *Fourth Prize* (10s.) to Sir Charles Seely, Bart.

Class 121.—SIX JARS OF DARK-COLOURED EXTRACTED HONEY, including any Variety of Heather Mixture (1 lb. each approximate weight).—*First Prize* (£1) to Miss A. B. Flower. *Second Prize* (15s.) to W. J. Goodrich. *Third Prize* (10s.) to E. C. R. White.

Class 122.—SIX JARS OF GRANULATED HONEY, of 1922 or any previous year (1 lb. each approximate weight).—*First Prize* (£1) to F. Humphreys. *Second Prize* (10s.) to J. E. Swaffield. *Third Prize* (7s. 6d.) to A. H. Bowen.

Class 123.—SIX SECTIONS OF HONEY, other than Heather (size 4½ by 4½, 1 lb. each approximate weight).—*First Prize* (£1) to C. Robinson. *Second Prize* (15s.) to H. P. Young. *Third Prize* (10s.) to W. Trinder.

Class 124.—DISPLAY OF COMB AND EXTRACTED HONEY, of any year (approximately 100 lbs. in weight, shown on a space of 3 ft. by 3 ft.).—*First Prize* (£5) to G. A. Taylor. *Second Prize* (£2) to F. Humphreys. *Third Prize* (£1) to E. R. Seadon.

Class 125.—WAX (not less than 2 lbs. in 2 cakes only; the produce of the Exhibitor's Apiary; extracted and cleaned by the Exhibitor or his Assistants).—*First Prize* (15s.) to C. Robinson. *Second Prize* (10s.) to E. C. R. White. *Third Prize* (7s. 6d.) to G. Thomas.

Class 126.—WAX (not less than 3 lbs.; the produce of the Exhibitor's Apiary; extracted and cleaned by the Exhibitor or his Assistants; to be shown in shape, quality and package suitable for the retail trade).—*First Prize* (15s.) not awarded. *Second Prize* (10s.) to F. Humphreys. *Third Prize* (7s. 6d.) to G. Davis.

Class 127.—INTERESTING AND INSTRUCTIVE EXHIBIT OF A PRACTICAL OR SCIENTIFIC NATURE, connected with BEE CULTURE, not mentioned in the foregoing classes.—*First Prize* (15s.) to G. A. Taylor, for "Honeycomb Development of Bees, Wash, &c." *Second Prize* (10s.) to G. Thomas, for "Non-warping Division Board." *Third Prize* (5s.) to W. Trinder, for "Division Board for any mark of Standard Brood Box."

Class 128.—THREE VESSELS OF COLONIAL EXTRACTED HONEY, as imported.—*First Prize* (Silver Medal) to West Bros., Canada. *Second Prize* (Bronze Medal) to J. McKinnon, Canada.

ROOTS.

Class 129.—SIX SPECIMENS OF GLOBE MANGOLDS, drawn from a crop of not less than two acres.—*First Prize* (£3) to W. Watts. *Second Prize* (£2) to D. Thomas. *Third Prize* (£1) to G. P. Lander.

- Class 130.—SIX SPECIMENS OF GOLDEN TANKARD MANGOLDS, YELLOW FLESHED, drawn from a crop of not less than two acres.—*First Prize* (£3) to A. Bovill. *Second Prize* (£2) to W. V. Andrew. *Third Prize* (£1) to A. D. Wilcox.
- Class 131.—SIX SPECIMENS OF INTERMEDIATE MANGOLDS, drawn from a crop of not less than two acres.—*First Prize* (£3) to R. Thomas. *Second Prize* (£2) to W. Watts. *Third Prize* (£1) to G. Lester.
- Class 132.—SIX SPECIMENS OF SWEDES, PURPLE TOP, drawn from a crop of not less than two acres.—*First Prize* (£3) to J. Meikle. *Second Prize* (£2) to G. F. B. Witcomb. *Third Prize* (£1) to W. Davidson.
- Class 133.—SIX SPECIMENS OF SWEDES, BRONZE TOP, drawn from a crop of not less than two acres.—*First Prize* (£3) to W. Davidson. *Second Prize* (£2) to Sir James Duncan. *Third Prize* (£1) to J. Hobbs.
- Class 134.—SIX SPECIMENS OF SWEDES, GREEN TOP, drawn from a crop of not less than two acres.—*First Prize* (£3) to W. Davidson. *Second Prize* (£2) to T. W. Turnbull. *Third Prize* (£1) to J. Bowden.
- Class 135.—SIX SPECIMENS OF TURNIPS, any one Variety, drawn from a crop of not less than two acres.—*First Prize* (£3) to W. D. Clark. *Second Prize* (£2) to P. Perry. *Third Prize* (£1) to Major J. A. Morrison, D.S.O.
- Class 136.—SIX SPECIMENS OF CABBAGE, drawn from a crop of not less than two acres.—*First Prize* (£3) to J. A. Wright. *Second Prize* (£2) to T. Chettle. *Third Prize* (£1) to W. Watts.
- Class 137.—SIX SPECIMENS OF KOHL-RABI, drawn from a crop of not less than two acres.—*First Prize* (£3) to A. Bovill. *Second Prize* (£2) to H. G. Howard. *Third Prize* (£1) to The Walthamstow Urban District Council.
- Class 138.—COLLECTION OF ROOTS, &c., FOR CATTLE-FEEDING IN WINTER. To consist of six specimens of not exceeding ten Varieties in as many distinct Types as possible.—*First Prize* (£5) to P. Perry. *Second Prize* (£3) to W. Watts. *Third Prize* (£2) to J. James.

INVENTIONS.

- Class 139.—ANY NEW APPARATUS OR INVENTION RELATING TO THE DAIRY INDUSTRY, OR ONE SHOWING DISTINCT AND PRACTICAL IMPROVEMENT ESPECIALLY AS TO SAVING LABOUR, not eligible for competition in any other Class, and not previously exhibited in competition at the Dairy Show.—Gold Medal to Sutherland Thomson & Co., for "Electrically Driven 'Princess' Separator." Silver Medal to The Dairy Outfit Co., Ltd., for "Equalizer Cream Vessel Preventing Extraction of Cream"; The Dairy Supply Co., Ltd., for "Millemon Wireless Welded Steel Container for Milk Bottles"; Barford & Perkins, Ltd., for "Cleena Milk Steam Sterilizing Outfit"; A. Grubham & Co., Ltd., for "Straightaway Lightning Bottle Filler and Capping or Dising Machine." Bronze Medal to Vipan & Headly for "Automatic Milk Bottle Filling and Capping Machine"; Associated Manufacturers Co. (London), Ltd., for "Wearn's Automatic Drive"; The Dairy Supply Co., Ltd., for "Snowdrop Iceless Ice Cream Plant"; W. H. Smith & Co. (Whitchurch), Ltd., for "Small Cream Cooler for attachment to Separator"; T. Grayson for "Reminder Liquid-level Alarm Indicator for use in connection with the filling of Railway Churns, &c."; C. Christensen for "Baltic New Ball-bearing Cream Separator E.B.3"; A. J. Clare for "Woven Fabric Filter Medium."
- Class 140.—SMALL MILK-COOLING PLANT, SUITABLE FOR FARMERS. Capable of reducing 100 gallons of milk per hour to 40° F. Cost, which will be taken into consideration, must not exceed £175, erected. Purchaser to provide foundations, water connections, and power.—*First Prize* (£20 and Silver Medal) to F. G. Phillips & Son, Ltd. *Second Prize* (Bronze Medal) to F. R. Martin & Co.

JUNKET-MAKING CONTESTS.

Class 141.—JUNKET MADE WITH MILK AND CREAM.

SECTION A.—*First Prize* (£2) to Miss L. Hosking. *Second Prize* (£1) to Miss R. E. Mitchell. *Third Prize* (10s.) to Miss J. B. Worth.

SECTION B.—*First Prize* (£2) to Miss M. Rounswell. *Second Prize* (£1) to Miss K. Davis. *Third Prize* (10s.) to Miss E. Waters.

SECTION C.—*First Prize* (£2) to Miss D. Edwards. *Second Prize* (£1) to Miss D. E. Nicholas. *Third Prize* (10s.) to Miss N. B. Mitchell.

Class 142.—CHAMPION CONTEST.—Prize (Silver Medal) to Miss L. Hosking.

BUTTER-MAKING CONTESTS.

Class 143.—Open to those who have never won a Prize at any Show wherever held.

SECTION A.—*First Prize* (£3) to Miss D. J. Coleman. *Second Prize* (£2) to Miss M. Rounswell. *Third Prize* (£1) to Miss M. Keedwell.

SECTION B.—*First Prize* (£3) to Miss D. E. Naish. *Second Prize* (£2) to Mrs. L. Smith. *Third Prize* (£1) to Miss N. Baker.

SECTION C.—*First Prize* (£3) to Miss G. B. Randall. *Second Prize* (£2) to Miss V. P. Bruff. *Third Prize* (£1) to Miss A. Bywater.

Class 144.—Open to Students who have attended Classes at the British Dairy Institute, Reading, for not less than one month during the past two years.

—*First Prize* (£3) to P. W. B. Gates. *Second Prize* (£2) to Miss N. J. Clark. *Third Prize* (£1) to Miss M. Woods.

Class 145.—Open Contest for Men and Women.

SECTION A.—*First Prize* (£3) to Miss E. Waters. *Second Prize* (£2) to Miss R. E. Mitchell. *Third Prize* (£1) to Miss M. Rounswell.

SECTION B.—*First Prize* (£3) to Miss G. E. Hicks. *Second Prize* (£2) to Mrs. L. Smith. *Third Prize* (£1) to Miss M. West.

SECTION C.—*First Prize* (£3) to Miss P. E. Jackson. *Second Prize* (£2) to P. W. B. Gates. *Third Prize* (£1) to Miss F. Scott.

SECTION D.—*First Prize* (£3) to Miss E. Parry. *Second Prize* (£2) to Miss P. Rigby. *Third Prize* (£1) to Miss R. M. Gwillim.

SECTION E.—*First Prize* (£3) to Miss E. M. Mortimer. *Second Prize* (£2) to Miss F. Jones. *Third Prize* (£1) to Mrs. A. Morgan.

Class 146.—Open to First Prize Dairy Show Winners of 1924.—*First Prize* (£3 and Silver Medal) to Miss P. E. Jackson. *Second Prize* (£2) to Miss E. Parry. *Third Prize* (£1) to Miss E. M. Mortimer.

Class 147.—CHAMPION CONTEST (open to Winners of First Prizes in the preceding Classes or at any Shows of The British Dairy Farmers' Association, Champions of any year excepted).—*First Prize* (Gold Medal) to Miss E. M. Mortimer. *Second Prize* (£3) to Miss J. Prichard. *Third Prize* (£2) to Miss E. James.

MILKERS' CONTESTS.

Class 148.—Open to Men and Women of 18 years and over.—*First Prize* (£7) to T. W. Parton. *Second Prize* (£4) to Miss D. Houlbrook. *Third Prize* (£3) to Miss J. Johnson. *Fourth Prize* (£2) to W. H. Slater. *Fifth Prize* (£1) to F. Temple.

Class 149.—Open to Boys and Girls under 18 years.—*First Prize* (£7) to C. W. Hobson. *Second Prize* (£4) to A. Logan, junr. *Third Prize* (£3) to G. R. Richards. *Fourth Prize* (£2) to J. Dixon. *Fifth Prize* (£1) to R. Parton.

Class 150.—CHAMPION CONTEST (open to First Prize Winners in preceding Classes or at the Shows of 1921, 1922, and 1923 of The British Dairy Farmers' Association, Champions of any year excepted).—Prize (Gold Medal and £2) to E. W. Watson.

COW-JUDGING CONTEST.

Class 151.—Open to Teams of Students from Agricultural Colleges and Farm Institutes.—Prize (B.D.F.A. Challenge Bowl) to The East Anglian Institute of Agriculture, Chelmsford, and Bronze Medal to R. Currie, G. Crawford, and Miss O. J. Robinson.

THE British Dairy Farmers' Association.

THE OBJECTS OF THE ASSOCIATION

are the improvement of

DAIRY STOCK AND DAIRY PRODUCE,

by encouraging the Breeding and Rearing of Stock for the special purpose of the Dairy; a larger and better production of Milk, Butter, Cheese, and Eggs; the Erection of Improved Dairy Buildings, and the Invention of New or Improved Dairy Utensils, Machinery, Implements, and Scientific Appliances. The Association also stimulates the Breeding and Rearing of Poultry, &c. By means of Papers in the Society's *Journal* (published annually), Annual Conferences in different dairy districts, Lectures, and Discussions, and in other ways, efforts are continually being made to disseminate a more thorough knowledge of Dairy husbandry. Moreover, prompt action is taken by the Association for the protection of the interests of Dairy Farmers in the event of their being threatened by legislation or by Departmental Orders.

Prizes to the value of about £3,500 are annually offered for competition at the Dairy Show, held at the Royal Agricultural Hall, Islington, London.

It is difficult to over-estimate the importance and need of greater attention being paid to the Dairy industry. It is admitted that by improved modes of managing Milk and its products, the wealth obtained from the Milch Cows of the country could be increased most materially. The Council, therefore, appeal to Agriculturists of all classes, and Dairy Farmers in particular, to become Members of the Association, and practically aid in developing its usefulness.

The advantages of Membership comprise:—

- 1.—A free pass to all the Society's Dairy Shows, available each day during the Exhibition, with the privilege of admitting free (by ticket) a friend on any one day.
- 2.—The privilege of participating at specially low charges in the Dairy Conferences at home or abroad, organised by the Association.
- 3.—The Exhibition of Live Stock, Dairy Produce, and Utensils, at a reduced scale of fees to those whose subscriptions for the past three years and current year are paid.
- 4.—A copy (free by post) of the *Journal* of the Association, published annually.
- 5.—Analyses by the Analytical and Consulting Chemist, at low fees, of samples of milk, cream, butter, cheese, feeding stuffs, water, soil, manures, &c., and advice on dairy matters connected with his Department.

- 6.—Professional advice and assistance at a reduced scale of charges, in any case of disease among the live stock of the farm.
- 7.—Examinations by the Consulting Pathological Bacteriologist, for particular pathogenic or disease-producing organisms.
- 8.—Investigations by the Consulting Dairy Bacteriologist into the cause of trouble or taints in dairy produce.
- 9.—In any case of hardship due to administration of legal or other regulations, Members are recommended to at once send details of such case to the Secretary, who will submit them to the Committee appointed to deal with such matters, after when advice and assistance will be given by the Association.

The Annual Subscription is £1, but Dairy Instructors and Students are admitted on payment of 1cs. 6d. per annum. The latter sum entitles Dairy Instructors to all privileges, except the reduced fees for exhibition at the Shows.

Members' Veterinary Privileges.

Members of the Association who require professional assistance in any case of disease among their animals must apply direct to the Consulting Veterinary Surgeon, Professor G. H. WOOLDRIDGE, Royal Veterinary College, Camden Town, London, N.W. 1, whose scale of charge is as follows :—

	£	s.	d.
Personal Consultation	0	10	6
Post-mortem Examination and Report	0	10	6
Consultation by Letter	0	5	0
Visit and Report, in case of an outbreak of disease, in addition to personal and travelling expenses, per day	2	2	0

Members' Botanical Privileges.

The Council have fixed the following rates of charge for the examination of Plants and Seeds for the *bond fide* and individual use and information of Members of the Association (not being Seedsmen), who are particularly requested to mention the kind of examination they require, and to quote its number in the subjoined Schedule.

No.	£	s.	d.
1.—A Report on the purity, and amount of nature of foreign materials, of a sample of seed	0	1	0
2.—A Report on the perfectness and germinating power of a sample of seed Nos. 1 and 2 together	0	1	6
3.—Determination of the species of any weed or other plant, or of any epiphyte or vegetable parasite, with a report on its habits, and the means for its extermination or prevention	0	1	0
4.—Report on any disease affecting farm crops	0	1	0
5.—Determination of the species of a collection of natural grasses found in any district, with a report on their habits and pasture value ...	0	4	0

BUTTER.						
Estimation of Water, Fat, Casein, and Ash ...	...	...	...	...	...	0 12 6
Examination for Foreign Fats ...	...	...	...	...	...	0 10 6

CHEESE.							£	s.	d.
Estimation of Water, Fat, Casein, and Ash ...	...	...	...	...	...	...	0	12	6
Examination for Foreign Fats (extra) ..	...	...	...	...	...	...	0	10	6
RENNET.							0	7	6
Examination of Strength	...	...	...	...	...	...	0	7	6
CAKES AND MEALS							0	7	6
Estimation of Oil only ...	...	...	...	...	...	...	0	7	6
Estimation of Oil, Albuminoids, Carbo-hydrates, &c.	...	...	...	...	...	...	0	15	0
GRASS, SILAGE, ROOTS, &c.							1	10	0
Estimation of Oil. Albuminoids, Carbo-hydrates, &c.	...	...	...	...	...	...	1	10	0
MANURES.							0	7	6
Estimation of Soluble Phosphoric Acid	...	...	...	...	...	...	0	7	6
Estimation of Soluble and Insoluble Phosphoric Acid	...	...	...	...	...	...	0	10	0
Estimation of Citric Soluble Phosphoric Acid	...	...	...	...	...	...	0	10	0
Estimation of Nitrogen...	...	...	...	...	...	...	0	7	6
Estimation of Potash	...	...	...	...	...	...	0	7	6
SOIL.							0	7	6
Estimation of Lime	...	...	...	...	...	...	0	7	6
Analysis and Report	...	...	...	...	...	...	2	2	0
WATER.							1	1	0
Analysis for Drinking or Dairy Purposes	...	...	...	...	...	...	1	1	0
POISONS.							2	2	0
Examination of a Substance for Mineral Poisons	...	...	...	...	...	...	2	2	0
Examination for Organic Poisons (Alkaloids, &c.)	...	...	...	...	...	...	3	3	0
CIDER AND FERMENTED DRINKS.							0	7	6
Estimation of Alcohol	...	...	...	...	...	...	0	7	6
Estimation of Alcohol, Sugar, Acidity, &c.	...	...	...	...	...	...	0	15	0
PRESERVATIVES.							0	2	6
Examining a Substance for Boracic Acid or Salicylic Acid, &c., for each Substance sought...	...	...	...	...	...	...	0	2	6
Estimation of the quantity of Boracic Acid	...	...	...	...	...	...	0	10	6
Analysis of a Preservative	...	...	...	...	...	...	1	1	0
CONSULTATION.							Free		
For Letter in reply to Enquiry	...	...	...	...	...	...	0	10	6
For Personal Interview	...	...	...	...	...	...	1	1	0
For Special Consultation	...	...	...	...	...	...	1	1	0

NOTE.—The Consulting Chemist will be prepared to quote reduced terms to members requiring a number of analyses at frequent intervals.

Instructions for Taking Fair Samples for Analysis.

Dairy Produce.—Milk should be sent in a well-corked 8-oz. clear bottle. The milk should quite fill the bottle. Butter or cheese, about 8 ounces; the former in a gallipot well tied down.

Soils.—A block of soil about four or five inches square, and nine inches deep, should be sent in a strong box by rail.

N.B.—In order to prevent disappointment, the Chemist requests that, as far as possible, Members desiring to hold a personal consultation should make an appointment by letter. Between 10 and 4 are the hours most convenient. The fees for analyses of artificial manures and feeding stuffs are only applicable to Members who are not commercially engaged in their manufacture or sale. All communications intended for the Analytical and Consulting Chemist must be addressed direct to Mr. T. J. DRAKELEY, Ph.D., M.Sc., F.I.C., F.C.S., M.I.M.E., 28, Russell Square, London, W.C. 1.

EXAMINATIONS BY Dr. ANDREWES, Pathological Laboratory,
St. Bartholomew's Hospital, London, E.C. 1.

£ s. d.

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INVESTIGATIONS BY MR. T. J. DRAKELEY, Ph.D., M.Sc., F.I.C., F.C.S.,
M.I.M.E., 28, Russell Square, London, W.C. 1, INTO THE CAUSES
OF TROUBLE OR TAINTS IN MILK, CREAM, BUTTER, OR CHEESE.

MILK.						£	s.	d.
Microscopical examination	...	...	...	...	...	1	1	0
Microscopical and cultural examination for a particular organism	...	...	...	...	...	2	2	0
Experimental and cultural examination for a particular organism	...	...	...	...	...	5	0	10
						10	10	0
CREAM, BUTTER, CHEESE.								
Microscopical examination	...	...	...	...	...	1	1	0
Microscopical and cultural examination...	...	...	...	...	...	2	2	0
PASTEURIZED OR STERILIZED MILK.								
Microscopical examination for bacteria	...	...	...	...	...	0	5	0
Estimating number of bacteria present	...	...	...	...	...	0	15	0
Cultural examination of bacteria present	...	...	...	...	...	2	2	0

Directions for Sending Samples.

Samples of milk or water (one quart) and cream (half pint) should be forwarded in wide-mouthed stoppered bottles which have previously been thoroughly cleaned, and then rinsed several times with very hot, almost boiling, water.

Butter is best sent in a $\frac{1}{2}$ -lb. brick or roll, just as it was made up, wrapped in grease-proof paper, and packed in a box.

If the *Cheese* is small, send a whole one; otherwise forward a square block of not less than one pound and not a wedge-shaped piece. Wrap in grease-proof paper and pack in a box.

All samples should be sent by the speediest method possible. They ought not to arrive either on Saturday or Sunday.

Samples to be examined for disease-producing organisms should be forwarded to Dr. Andrewes, Pathological Laboratory, St. Bartholomew's Hospital, London, E.C. 1. Members are requested to note that in the case of examination for the tubercle bacillus the method of animal inoculation, which experience has shown to be the only reliable one, will be alone used. It is impossible to carry out the process of sedimentation necessary for the detection of tubercle bacillus in milk which is received in a curdled condition. The report cannot be sent for a period of four to six weeks from the time the sample is received, but in the case of other pathogenic organisms the time required is much shorter. Samples to be examined for organisms producing taints in dairy produce should be forwarded to Mr. T. J. DRAKELEY, Ph.D., M.Sc. F.I.C., F.C.S., M.I.M.E., 28, Russell Square, London, W.C. 1.

THE BRITISH DAIRY INSTITUTE, READING.

The British Dairy Institute was established at Aylesbury in 1888, by the British Dairy Farmers' Association, and several hundred Students were successfully trained there in different branches of dairy work. In order that Students might have an opportunity of combining with the practical study of dairying a more complete scientific instruction, the Institute was, in 1896, moved to Reading, and placed under the management of a Committee representing the British Dairy Farmers' Association and the University College, Reading.

The Institute contains large milk-receiving, butter-making, and milk-testing rooms; rooms for the manufacture of pressed, unpressed, and soft cheeses; and rooms for the ripening and drying of different varieties of cheese; besides reading, lecture, and common rooms. It is equipped with the best modern apparatus for the manufacture of dairy produce, including power-driven separating and buttermaking plant, and cold storage plant.

The instruction given is both practical and theoretical, and is arranged to suit the requirements of those who need either elementary or advanced dairy instruction, or who wish to perfect themselves in the manufacture of any special variety of dairy produce. Instruction is provided for students who wish to specialize in Bacteriology or Chemistry applied to dairying.

The Institute is open throughout the year, except during the Winter Vacation of eight weeks, which commences about the middle of November.

The Courses at the Institute are open to men and women above the age of 16 years. Students may join at any time while the Institute is open, and for any period not less than a week, but those who desire to take a thorough short course in buttermaking or cheesemaking are recommended to attend the Six Months' or Three Months' Joint Course in Dairying.

The manufacture of hard-pressed and soft cheeses is taught during the whole of the time when the Institute is open, but Stilton and other blue-veined varieties are not made until May.

Instruction is given in buttermaking, clotted-cream making, the testing and analysis of milk, the management of various types of separators, the handling and care of milk, and the preparation of starters, &c. Lectures and demonstrations are usually given in the afternoons, the mornings being chiefly devoted to practical dairy work.

Practical and theoretical instruction in buttermaking and cheesemaking (including hard-pressed, blue-veined, and soft cheese), £1 per week; £10 for three months; £18 for six months.

Practical and theoretical instruction in buttermaking only, 10s. per week (or part of week).

A full Prospectus will be sent on application to the Secretary, British Dairy Institute, Reading.

B. RAVENSCROFT,
Secretary, B.D.F.A.

28, Russell Square, London, W.C. 1.

Forty-ninth Half-yearly Report of the Council presented to the Members at the Meeting held at the Dairy Show, Royal Agricultural Hall, Islington, London, N.1, on Wednesday, October 22nd, 1924.

Recent efforts to increase the Membership have met with gratifying success, but Members are still appealed to for personal efforts in this connection.

The entries for the Annual Dairy Show are considered highly satisfactory, being only 123 less than last year's Record, the deficit being mainly due to the unfortunate continuance of Cattle Disease. It is a matter for regret that the proposed enlargement of the Agricultural Hall has not materialised. This question of space is a hardy annual with which your Council is ever confronted. To stage the ever-growing entries in the present available space is a feat requiring much forethought.

A grant of £500 has been made to the British Dairy Institute to provide increased accommodation; £200 towards the cost of the National Milk Publicity Stall at the British Empire Exhibition; and a special contribution of £200 to the National Institute for Research in Dairying, from the Members of 1923 Danish Conference.

The 1924 Dairy Conference was held last June in the Lake District, with Keswick as a centre, and although the number participating was smaller than usual the tour proved both educational and enjoyable. The thanks of all are due to Mr. W. Burkitt (Chairman of the Conference Committee), and to Mr. R. Lindsay Robb, Cumberland and Westmorland Farm Institute, for the most interesting programme provided. The usual examinations have been held at Reading, Studley, and Chelmsford, and at each centre few have failed to secure the certificate sought.

Death has removed Mr. John Welford from the list of Vice-Presidents. Mr. Welford had been connected with the Association since its foundation in 1876. For some years past age had restricted his attendance at the Council Meetings, but in his death the Council feel the loss of one whose judgment in earlier years had done much to develop the Association's work. The Council has nominated Mr. S. R. Whitley to fill this vacancy.

Major J. A. Morrison has kindly consented to again stand for re-election as President, and your vote will shortly be asked in support of this nomination.

The following list of Vice-Presidents has been prepared, for which your approval will be sought :—

The Marquess of Crewe, K.G., Crewe Hall, Crewe.
 Lord Kenyon, Gredington, Whitechurch, Salop.
 Lord Strachie, Sutton Court, Pensford, Bristol.
 Major Lord O'Hagan, 16, Eaton Square, S.W. 1.
 Lord Desborough, K.C.V.O., Taplow Court, Taplow, Bucks.
 Lord Bledisloe, K.B.E., Lydney Park, Gloucestershire.
 The Earl of Dartmouth, P.C., Patshull, Wolverhampton.
 Sir Gilbert Greenall, Bart., C.V.O., Walton Hall, Warrington.
 Viscount Elveden, C.B., C.M.G., M.P., Pyrford Court, Woking.
 S. Palgrave Page, J.P., 27, Oakwood Court, W. 14.
 G. Titus Barham, Sudbury Park, Wembley, Middlesex.
 S. R. Whitley, J.P., Rookwood, Shinfield, Reading.

Members of the Council named below retire in accordance with the Articles of Association, and with the exception of Mr. E. C. Ash, who does not seek re-election, have been again proposed.

Also, owing to the nomination of Mr. S. R. Whitley as a Vice-President, a second vacancy is created.

E. C. Ash	...	...	...	...	Suffolk.
Lieut.-Col. E. W. Caddick	...	...	...	...	Hereford.
H. Corrie	...	...	...	...	Surrey.
R. H. Evans	...	...	...	...	North Wales.
John Evens	...	...	...	...	Lincoln.
W. J. Golding	...	...	...	...	Kent.
Primrose McConnell	...	...	...	...	Essex.
J. Mackintosh	...	...	...	...	Berks.
Sir Sidney J. Pocock, J.P.	...	...	...	...	Surrey.
J. L. Shirley	...	...	...	...	Bucks.
C. W. Walker-Tisdale	...	...	...	...	Yorks.
R. Wallace	...	...	...	...	Herts.

The following new Candidates have been proposed and seconded for the Council :—

- G. F. Gosney (Secretary, National Association of Creamery Proprietors), 234, Strand, W.C. 2, proposed by M. Ewing, seconded by H. Edwards.
- R. Fletcher Hearnshaw (Farmer), Fox Hill, Burton Joyce, Notts, proposed by Lt.-Col. E. W. Caddick, seconded by W. S. Brocklehurst.

Margaret Howard (Dairy Expert), 15, Victoria Square, Newcastle-on-Tyne, proposed by J. Benson, seconded by Miss Macqueen.

Major S. P. Yates (Farmer), Broughton Grange, Banbury, proposed by F. H. Thornton, seconded by T. Allen-Stevens.

Frederick T. Young (Agricultural Merchant), Higher House, West Lydford, Taunton, proposed by Chas. Prideaux, seconded by Sidney T. White.

Capt. Nelson Zambra, M.C. (Farmer), West Tisted Manor, Ropley, Hants, proposed by Leonard Sutton, seconded by E. P. F. Sutton.

The following Resolutions have been passed :—

5th March, 1924.

“To call attention to the tragic results of the recent outbreaks of Foot and Mouth Disease in Cheshire and surrounding districts, and to consider what assistance, if any, can be given by this Council to any fund which may be raised to assist those Dairy Farmers who have suffered such serious loss.”

“The Council unanimously agree that the Council of every County in England and Wales which has not already made an order restricting the movement of animals across its administrative boundaries be urged to do so forthwith, with a view to checking the further spread of Foot and mouth Disease.”

2nd April, 1924.

“That the Council is of opinion that all Cows entered for the Dairy Show should be free from Tuberculosis, and refers the whole question to a special committee to obtain further information, and report.”

Mr. Herbert J. Page will be proposed for re-election as the Association's Official Auditor, with Messrs. P. Hay, H. Dunn, and T. W. Palmer as Hon. Auditors.

By Order of the Council,

B. RAVENSCROFT,

Secretary.

28, RUSSELL, SQUARE,
LONDON, W.C. 1.

October, 1924.

FORTY-NINTH ANNUAL REPORT OF THE COUNCIL

to the General Meeting of Members,
Wednesday, 4th March, 1925.

In presenting you with the Financial Statement for 1924, it gives the Council pleasure to again record a profitable year.

At the close of 1923 the Membership Roll stood at 1,404. New Members have totalled 176, and resignations and deaths have amounted to 112, leaving a total Membership of 1,468, consisting of 130 Life Members, 7 Hon. Members, 1,317 Annual Members, and 14 Affiliated Societies. Included in the 112 names deleted from the new register occur many through non-payment of subscriptions. The following statement shows the total Membership at the close of the past six years :—

1919	981	1921	1,175	1923	1,404
1920	1,087	1922	1,274	1924	1,468

That a 49th Annual Report of an Association such as the British Dairy Farmers' should be able to report only a Membership of 1,468 proves that it is far from being sufficiently supported by dairy farmers, considering the high status our Association holds in the Dairy World. The Council has long felt that the best recruiting officer is each individual Member, and to that end urges each Member to do his or her utmost towards strengthening the life-blood of the Association—its Membership.

The Dairy Show last year was again most satisfactory, and had not two causes (Wembley and the General Election) contributed to a lesser "gate," the result would have been materially increased.

The elevation of Mr. S. R. Whitley to a Vice-Presidency, and the retirement of Mr. E. C. Ash, has been followed by the election to the Council of Miss M. Howard and Major S. P. Yates.

Mr. F. J. Bull (Chief Clerk since 1909) has been appointed Assistant Secretary to the Association.

The Annual Report from the British Dairy Institute, Reading, is very satisfactory, and the Council has taken the opportunity to place on record its high appreciation of the work done by the Manager, Mr. A. Todd, and his assistant, Miss Dearden.

The services of the Consulting Chemist, Dr. T. J. Drakeley, were requisitioned by a member in the case of a milk summons at Sproatley, Hull. The charge was that of selling milk below standard, but the verdict was secured for the farmer on the ground that the milk was as it came from the cow. The case raised interesting points which are now being considered by a special Committee appointed by your Council.

The Medal Distribution Scheme has resulted in the following grants being made :—

	Gold.	Silver.	Bronze.
Dairy Cattle (Recorded Cows)	—	7	5
Butter 	—	2	3
Buttermaking... 	—	3	1
Clean Milk Competition ...	1	4	1
Cow Judging Contest (Young Farmers' Clubs)	—	1	2
	<u>1</u>	<u>17</u>	<u>12</u>

In several instances medals offered by the Association were not awarded in consequence of Cattle Sections being cancelled through Cattle Disease restrictions.

Examinations held at the British Dairy Institute, Reading, Studley College, Studley, and the East Anglian Institute, Chelmsford, have resulted in the following Diplomas and Certificates being granted : Diploma with Honours, 6 ; Diploma, 27 ; Buttermaking Certificate, 71 ; Cheesemaking Certificate, 57.

The following resolutions have been passed :—

12th November.

“ That the British Dairy Farmers’ Association is prepared to render all the assistance which is within its power, financially and otherwise, in promoting a World’s Dairy Congress, if one can be arranged to be held in this country in 1926, and is prepared to contribute to the funds to be raised for such purpose a sum of £500.”

10th December.

“ That any Cow or Heifer entered for any future Dairy Show whose milk for any one milking falls below 3 per cent. fat, and for the same milking also falls below 8·5 per cent. solids other than fat, shall not be eligible for any awards on Inspection, in Milking Trials, or Butter Tests and any Trophies at such Dairy Show.”

The 1925 Dairy Conference is to be held in Somersetshire, May 15th—22nd, with Bristol as a centre. The programme is now being prepared, and will be forwarded to Members in due course.

By order of the Council,

B. RAVENSCROFT,

Secretary.

The British Dairy Farmers' Association.

FINANCIAL STATEMENTS.

Dr.	GENERAL INCOME AND EXPENDITURE ACCOUNT for the Year ended December 31st, 1924.				Cr.	
	EXPENDITURE.		INCOME.		£	s. d.
Education and Examinations—						
Reading ...	£164 12 9		Subscriptions ...		1,382	13 0
Chelmsford and Studley ...	18 16 10		Donations ...		3	13 6
Journal ...			Examinations—			
Medal Scheme ...			Reading ...	£85 3 9		
Bank Charges ...			Chelmsford and Studley ...	18 16 10		
Rent ...			Journal ...		104	0 7
Prizes to Exhibitors ...			Contributions to Prize Fund ...		65	19 7
Sales of Exhibits ...			Entry Fees, Competitive and Non-Competitive ...		410	7 6
Dairy Show—Hire of Hall, Fittings, Postage and			Sales of Exhibits ...		9,361	2 10
Sundry Expenses ...			Admission Money ...		2,068	17 10
Catalogues ...			Sales in Working Dairy ...		4,183	16 6
Salaries ...			Catalogue Sales and Advertisements ...		596	2 3
Wages and Labour ...			Interest on Investments—		1,160	8 10
Printing, Stationery, Postage, and Sundry Office			Taxed before receipt ...	£336 7 7		
Expenses ...			Untaxed before receipt ...	100 0 0		
Railway Fares for Attendance at Council Meetings			Bank Deposit ...	35 4 4		
Auditors' Fees and Officers' Retaining Fees ...			Hire of Council Room ...		471	11 11
Depreciation on Furniture ...			Protest Fee ...		18	18 6
Income Tax, 1924-1925 ...					1	1 6
Donations—						
University College, Reading ...	£500 0 0					
National Milk Publicity, Wembley ...	200 0 0					
Royal Agricultural Benevolent Society ...	10 10 0					
Entry Fees returned on account of Foot and Mouth Disease ...						
BALANCE, being excess of Income over Expenditure						
					£10,828	13 4

Dr.	STATEMENT OF ASSETS AND LIABILITIES, December 31st, 1924.				Cr.			
	LIABILITIES.	£	s.	d.	ASSETS.	£	s.	d.
Sundry Creditors ...	...	62	0	0	Investments at Cost Price—			
Conference Account ...	...	41	10	9	£375 Southern Railway 4% De-			
Surplus of Assets over Liabilities	...	...	...	...	venture Stock ...	265	0	0
at 31st December, 1923 ...	£12,384	1	8		£375 London Midland & Scottish			
Add Excess of Income over	...	£1,522	3	2	Rly. 4% Debenture Stock	280	0	0
Expenditure, 1924 ...				13,906	£500 India 3% Stock ...	265	0	0
				4 10	£2,000 War 5% Stock ...	1,701	9	0
					£1,500 L.C.C. 3% Stock ...	783	17	0
					£400 Hertfordshire 6% Stock	389	1	0
					£2,000 Metropolitan Water Board			
					" B " 3% Stock ...	1,037	13	0
					£1,000 Victoria 5½% Stock	1,017	7	8
					£2,000 New South Wales 5% Stock	1,990	4	0
					£1,000 Tasmanian 5% Stock ...	992	12	0
					£4,000 Conversion Loan 3½% ...	3,110	8	0
						*11,832	11	8
					Furniture and Appliances ...	241	11	0
					Less 10 per cent. Depreciation	24	3	0
					British Dairy Institute: Value of			
					Appliances at Reading ...			
					Sundry Debtors ...	1	11	6
					" on account of Dairy			
					Show, 1924 ...	98	12	8
					Cash at Bank and in hand...	100	4	2
					"The value, according to Market Price, of these	1,573	12	6
					Investments at 31st December, 1924, was			
					£12,901 10s.	£14,009	15	7

REPORT OF THE AUDITORS TO THE MEMBERS OF THE BRITISH DAIRY FARMERS' ASSOCIATION.

We have audited the foregoing Statement of Assets and Liabilities and the Income and Expenditure Account with the books and accounts of the Association. We have received all the information and explanations we have required. In our opinion such Statement of Assets and Liabilities is a full and fair statement containing the particulars required by the Regulations of the Association, and properly drawn up so as to exhibit a true and correct view of the state of the Association's affairs according to the information and explanations we have received and as shown by the Books.

(Signed) HERBERT J. PAGE, *Chartered Accountant*,
 18, Southampton Buildings,
 Chancery Lane, London, W.C. 2 } *Auditors.*
 PERCY T. HAY
 THOS. W. PALMER

2nd February, 1925.

British Dairy Farmers' Association.

MEDAL SCHEME.

Special Prizes at Educational Institutions and Country Shows.

The Council of the British Dairy Farmers' Association is prepared to consider applications from Educational Centres and Approved Societies in the United Kingdom for their Gold, Silver, and Bronze Medals to be awarded in connection with dairying and dairy farming under the following conditions, viz. :—

1. All applications must be made on our official form and must clearly state the object for which the Medal or Medals are required.
2. Only one application from any Institution or Society can be considered in any one year.
3. The application must be repeated annually if Medals are again required.
4. A copy of the Proposed Prize List, showing the Conditions of the Award of the Medal and the name of the judge, should accompany the application, and the offer of a Medal cannot be confirmed until the Prize List has been approved.
5. The British Dairy Farmers' Association stipulates that no entry fee shall be charged in respect of these Medals, they being offered as Special Extra Prizes.
6. Notification of the award, with the winner's full name and address, to be forwarded to the Secretary, British Dairy Farmers' Association, 28, Russell Square, London, W.C.1, within 14 days of the award being made.
7. A person may not receive more than one Medal under this Scheme for the same subject or exhibit during any one year.

STUDENTS.—The B.D.F.A. Silver Medal for Students is reserved for those who have obtained the B.D.F.A. Diploma.

The B.D.F.A. Bronze Medals may be awarded on application to Students gaining the first position in short course Examinations and the prospectus of the course must be forwarded with the application for the Medal.

DAIRY PRODUCE AND BUTTERMILK.—The B.D.F.A. will consider applications on behalf of County or similar Shows for a Silver Medal as a Championship award.

The B.D.F.A. Bronze Medals or Certificates may be available for local Shows, and in each case shall only be awarded to the best exhibit or competitor.

CATTLE.—The B.D.F.A. Silver Medals will only be awarded at County and similar Shows to cows or heifers' milk recorded under the Ministry of Agriculture Scheme.

The B.D.F.A. Silver Medals will only be awarded to Bulls out of recorded cows.

The B.D.F.A. Bronze Medals for cattle will be available only at Local Shows under similar conditions.

CLEAN MILK COMPETITIONS.—The B.D.F.A. Gold Medal may be available, on application, to the winner of clean milk competitions of six months or more duration. Silver Medals for clean milk competitions of shorter duration.

In the event of any dispute as to the interpretation of these Rules, the Council of the British Dairy Farmers' Association reserves full power of decision, and in the event of the Medal not being awarded in accordance with the above Rules and Conditions, the Council reserves the right to withhold the Medal altogether.

BY ORDER OF THE COUNCIL.

AWARDS DURING 1924.

Applicant.	Show or Examination held at	Date.	Medal.	Winner and Object.
Kent Education Committee	Kent	Jan.-April	Silver...	C. Baker, Winner of Clean Milk Competition.
Essex Agricultural Society	Essex	Jan.-May	Silver...	A. E. Carter, Winner of Clean Milk Competition.
Yeovil Agricultural Society	Yeovil	Jan.-July	Gold	J. Crumpler, Winner of Clean Milk Competition.
Port Elizabeth Agricultural Society	Port Elizabeth	April 1-4	Silver...	F. H. Holland, for Shorthorn Cow "Klipprug Cherry," in Milking Trials.
Backinghamshire County Council	Bucks	April-June	Silver...	W. Culley, Winner of Clean Milk Competition.
Suffolk Agricultural Association	Bury St. Edmunds	May 29 & 30	Bronze	Miss P. Rigby, Champion Buttermaker.
Yealampton Agricultural Association	Yealampton	June 4	Bronze	Miss F. B. Hodder, Butter as best exhibit of Butter or Cream.
Royal Counties Agricultural Society	Windsor	June 6-10	Silver...	H. M. Martineau, British Friesian Cow, "Reddown Elsa 5th," as best Dairy Cow or Heifer.
"	"	"	"	Miss E. Parry, Champion Buttermaker.
Darwen and District Agricultural Association	Darwen	June 7	Silver...	G. W. Isherwood, Cow "Challion Cigarette," as best Dairy Shorthorn Cow or Heifer.
Essex Agricultural Society	Halstead	June 11 & 12	Silver	D. Trembath, Red Poll Cow, "Tending Floss 2nd," as best Dairy Cow or Heifer.
"	"	"	"	Miss M. Clarke, Champion Buttermaker.
Royal Cornwall Agricultural Association	Wadebridge	June 11 & 12	Silver	Mrs. R. C. Bainbridge, Guernsey Cow, "Tregaming Lucky," in Milking Trials.
Penrith Farmers' and Kidd's Auction	Penrith	June 17	Silver...	Miss I. Northcott, Best Exhibit of 2 lbs. Butter.
Staffordshire Agricultural Society	Walsall	July 23 & 24	Silver...	A. Errington, Shorthorn Cow, "Ashbam Beauty," as Best Cow.
"	"	"	"	H. A. Brown, Shorthorn Cow, "Violet," as best Dairy Cow.
"	"	"	Bronze	G. Sumner, Best Exhibit of Butter.

AWARDS DURING 1924.—*Continued.*

Applicant.	Show or Examination held at	Date.	Medal.	Winner and Object.
Yorkshire Agricultural Society...	York ...	July 23-25 ...	Silver...	Miss B. Mudd. Champion Buttermaker.
Cumberland Agricultural Society ...	Carlisle ...	July 26 ...	Silver & £5	J. Ion. Shorthorn Cow, "Marian," as best Dairy Cow
Bredon and District Agricultural Show	Bredon ...	August 4 ...	Bronze	W. C. Spencer & Son. Shorthorn Cow, "Lady Gay," as best Dairy Cow.
Penrith Agricultural Society ...	Penrith ...	August 12...	Bronze	J. Smith, Shorthorn Cow. "Dainty Dinah," as best Dairy Cow.
Glannau Erch Agricultural Society ...	Pwllheli...	August 28...	Bronze	F. C. Minoprio, Cow, "Taicoelion 3rd," as best Welsh Black Cow or Heifer.
" " " " " "	" "	" "	Bronze	G. Jones. "Snowdon Major," as best Welsh Black Bull.
Middlewich and District Agricultural Society	Middlewich ...	Sept. 10 ...	Bronze	Mrs. A. Cookson. Best Exhibit of 2 lbs. Butter.
Young Farmers' Clubs	Dairy Show, Islington	Oct. 21-24...	Silver	Miss D. K. Deun. Highest score in Cow-Judging Contest.
" " " " " "	" "	" "	Bronze	R. Knight. Second highest score in Cow-Judging Contest.
" " " " " "	" "	" "	Bronze	L. White. Third highest score in Cow-Judging Contest.
Gloucestershire Root, Fruit and Grain Society	Gloucester ...	Nov. 10 ...	Silver...	Mrs. G. W. Lusty. Best Exhibit of Butter.
Cumberland and Westmorland Farm School	Newton Rigg	1924	Bronze	W. B. Hutchinson. Best Student in Agriculture.
" " " " " "	" "	" "	Bronze	Miss M. R. Blacklock. Best Student in Dairying.
Leicestershire County Council	Leicestershire	Oct.-Dec. ...	Silver...	H. A. Swain. Winner of Clean Milk Competition.
" " " " " "	" "	" "	Bronze	E. C. Johnson. Gaining 2nd place in Clean Milk Competition.

British Dairy Farmers' Association.

PRIZE ESSAY ON A DAIRYING SUBJECT.

The Council offers a Prize of £10 and the B. D. F. A. Silver Medal for an Essay upon any practical or scientific subject relating to Dairy Farming or Dairying, conditionally upon sufficient merit being shown.

Preference will be given to one based on the original work and experience of the writer. Where the work of others is relied upon, full references must be given, either in footnotes or by numbers (1), (2), &c., with a list of authorities at the end.

The Essay should not exceed 5,000 words, and must be received by the undersigned on 1st December, 1925.

An Essay must be sent in a sealed envelope, bearing a *nom de plume*, and in another sealed small envelope, also bearing the *nom de plume*, the Author must insert his name and address.

The Prize Essay will be the property of the Association. Others will be returned to their respective Authors, but the Association reserve the right to retain Essays on subjects suitable for inclusion in the Annual Journal, which will be paid for at the usual rate for literary contributions.

B. RAVENSCROFT,

Secretary,

28, Russell Square, London, W.C. 1.

British Dairy Farmers' Association.

Suggestions to Farmers as to how best to ensure

THE

CLEANLINESS OF THE MILK SUPPLY.

The attainment of a clean milk supply is largely dependent upon the action of Dairy Farmers themselves.

Every Dairy Farmer is financially interested in this question. Public doubt of the cleanliness of the milk supply means reduced demand for fresh milk. Public confidence means increased use of milk as food and drink—consequently a larger demand.

Any Dairy Farmer by want of reasonable care can jeopardize the reputation of the whole industry and thus destroy the good work of those whose efforts are to increase the consumption of milk.

The co-operation of every producer is confidently requested.

The main points to be emphasized are :—

- (1) That consumers are entitled to receive milk which is clean and wholesome.
- (2) That the precautions necessary to produce clean wholesome milk are easy, simple and inexpensive.

Briefly these precautions are :—

- To keep the milk sheds and cows as clean as possible.
- To clean the udders and, before milking, wipe them with a clean damp cloth, rinsed after every cow.
- To use a partly covered milking pail.
- To see that milkers milk with clean hands.
- To strain the milk through a strainer fitted with a new disc of cotton wool at each milking.
- To empty water from cooler before washing.
- To rinse utensils in cold water. Thoroughly wash in hot water and soda and scald in boiling water or, preferably, sterilize with steam or by boiling in water.
- To stand utensils upside down to drain after cleaning and NOT to wipe them.

THIS ASSOCIATION APPEALS TO EVERY DAIRY FARMER TO PUT THESE PRECAUTIONS INTO OPERATION, BEING CONVINCED THAT IF PRODUCERS DO NOT TAKE MEANS TO ENSURE A CLEAN WHOLESOME MILK SUPPLY THE DEMAND FOR FRESH MILK WILL SERIOUSLY DIMINISH.

Correspondence on this subject will receive attention at the Offices of the Association, 28, Russell Square, London, W.C. 1.

British Dairy Farmers' Association.

EXAMINATION FOR THE B. D. F. A. DIPLOMA.

The Association grants to any Candidate who satisfactorily passes the necessary Examinations :—

A Diploma and Silver Medal for Proficiency in the Science and Practice of Dairying.

Candidates for the Diploma must have previously obtained the Butter and Cheesemaking Certificates of the Association,* and must produce satisfactory evidence that they have received not less than one year's scientific and practical instruction at some recognised centre for Dairying Instruction, and have spent at least twelve months on a Dairy Farm in addition to the time spent at the Centre.

The Examination will extend over three or more days, and will test the Candidates' knowledge and experience of the Principles and Practice of Dairying and Dairy Farming. The Candidates will also be required to satisfy the Examiners with regard to their skill in Butter and Cheesemaking.

Candidates will be required to answer, in writing, sets of questions within a given time, and will also be examined *à la voce*. They will be expected to possess a sound knowledge of all the subjects included in the following Syllabus. Candidates, if required, must produce their note-books of Lectures and Demonstrations attended.

The Practical Examination will include Buttermaking, and also the preparation of one Hard-pressed Cheese, either Cheddar, Cheshire or Derby, to be selected by the Examiner, and one Blue-veined Cheese, either Stilton or Wensleydale, to be selected by the Candidate.

The Diploma of the Association will be awarded to all Candidates who obtain not less than :—

- (a) 66 per cent of the total possible marks for the Theoretical and Practical Examinations, and
- (b) 75 per cent. in the Practical Examinations.

The Diploma with Honours will be awarded to Candidates satisfying the following conditions :—

- (1) The total marks obtained shall be not less than 75 per cent. of the possible marks for the whole Examination.
- (2) The Candidate shall obtain not less than 70 per cent. of the possible marks for each and every written paper.
- (3) The Candidate shall obtain not less than 80 per cent of the possible marks in each Practical Examination (Cheese and Buttermaking).

EXEMPTION FROM THE PRACTICAL EXAMINATIONS.

Candidates will be considered to have satisfied the Examiners in either Cheese or Buttermaking, or both, if they have already obtained not less than 80 per cent. of the marks in the respective Practical Examinations for the Cheese and Buttermaking Certificates granted by this Association. Such Candidates will not be required to submit themselves to any further test in either Cheese or Buttermaking, or both as the case may be, but will be given credit for their practical skill.

Note.

Candidates excused the Practical Examination in Cheese and/or Buttermaking will have precisely the same opportunity of securing the Diploma or the Diploma with Honours as other Candidates who take both the Theoretical and Practical branches of the Examination at the same time.

* Equivalent Certificates of recognised bodies will be accepted by the Association as evidence of sufficient training to justify entry for this Examination.

Examinations for the Diploma are held in the Autumn upon dates to be announced in the *Agricultural and Dairy Press*.

Entries will close 28 days prior to the date fixed for the commencement of the Examination.

The entry fee is 20s.

SYLLABUS.

1. DAIRYING.

- (a) **Milk.**—The Food Value of Milk; The Yield of Milk from various Breeds; Secretion of Milk and Structure of the Udder; Milking by Hand and Machine; Handling of Milk from Cow to Dairy; Importance of Cleanliness; Production of Highest Grade Milk; Cooling of Milk; Sale of Milk; Influence of Food on the Yield, Flavour, and Fat Contents of Milk; Composition of Milk, Nature and Properties of its Constituents; Differences between Morning and Evening Milk and their Causes; Methods of Sampling and Simple Methods of Testing Milk, as the Lactometer, Creamometer and Centrifugal Fat Testers; Testing for Acidity; Causes of Fermentation; Colostrum, its Nature and Properties; the Keeping of Dairy Records; the Handling of Evening's Milk for Cheesemaking; Properties of Milk suitable for Cheesemaking; Taints in Milk—their Causes, Effects and Remedies; Tests for such Taints; the Ripening of Milk for Cheesemaking; Methods and Reasons for Ripening; use of Natural and "Culture" Starters; Pasteurization of Milk; Chilled Milk: their Subsequent Use for Cheesemaking; Special Testing of Milk, Whey, and Curd requisite in a Cheese Dairy; Utilization of Dairy By-products.
- (b) **Cream.**—The Various Methods of obtaining Cream; the Construction and Use of the Utensils Employed; Separators, the Construction and Use of the various Types; Composition of Cream, Separated Milk, Skimmed Milk and Butter-milk, with Simple Tests for Fat in same; the Ripening of Cream, Objects and Results; Changes during Ripening; Testing for Acidity; Natural and Artificial Ripening and Preparation of Starters; the Preparation of Cream for Churning; Preparation of Cream for Sale; Clotted Cream.
- (c) **Butter.**—The Various Methods of obtaining Butter, including the Churning of Whole Milk; Utensils required and the Preparation, Use and Care of same; the Process of Butter Manufacture in all its Details; Conditions which affect the Butter Yield; Circumstances affecting the Flavour, Texture, Colour and Keeping Properties of Butter; Dry-salting and Curing of Butter; Faults in Butter and their Causes; Composition and Properties of Good Butter; Composition and Causes of Inferior Butter; Methods of Judging Butter.
- (d) **Cheese.**—Rennet: its Preparation, Properties, and Action upon Milk; Testing its Strength; Storage of Rennet; Substitutes for Rennet; Annatto; a General Knowledge of the Manufacture of the Principal Varieties of Hard-pressed, Blue-veined, and Soft Cheeses, including the use of Wood and Metal Tubs and Jacketed Vats; Methods of Scalding; the Development and Control of Acidity in Curd; Salting and Brining in Cheesemaking; Bandaging; Ripening and Storing of Hard-pressed, Blue-veined and Soft Cheeses; Defects in Cheese and their Causes; Composition of Cheese; Composition and Utilization of Whey; the Manufacture of Whey Butter; the Equipment of a Cheese Dairy and its Cost; the Care of Utensils.

Candidates will be required to make one Hard-pressed Cheese, either Cheddar, Cheshire, or Derby, to be selected by the Examiner, and one Blue-veined Cheese, either Stilton or Wensleydale, to be selected by the Candidate. They must also have a knowledge of the manufacture of other varieties of Hard-pressed Cheese, and of Soft Cheese.

2. DAIRY FARMING.

(a) A General Knowledge of Dairy Farm Management, including the Cultivation of Farm Crops, with a Special Knowledge of those employed in the Feeding of Dairy Stock.

(b) Foods and Feeding.—The Effects of various Foods on Milk and Dairy Products; Systems of Feeding and the Compilation of Rations.

(c) Live Stock.—Characteristics and Management of Different Breeds of Cattle; their Breeding and Rearing; Choice of Dairy Cattle for Special Purposes and Situations; Identification and Treatment of Common Ailments of Dairy Stock; Pigs and Poultry; Suitable Breeds for Use in Connection with a Dairy Farm and their Management.

(d) Buildings suitable for a Dairy Farm: their Situation, Construction, Ventilation, Drainage, &c.; Water Supply.

(e) Milk Records; Business Methods involved in Dairying; Book-keeping on a Dairy Farm.

(f) Improvement in Equipment and Methods on Dairy Farms; the Use of Score Cards.

3. CHEMISTRY.

(a) General.—The Chemical Elements and Constituents found in Milk Soils, Plants, Manures, Animals, and Foods: their Nature and Properties so far as they relate to Agriculture; the simpler Laws of Chemical Combination and Change so far as regards these Substances.

(b) Dairy.—The Composition and Properties of Milk, Cream, Butter, Cheese, and Dairy Products, and of all Substances used in the Dairy; Simple Methods of Analysis as applied to these Substances; the Chemical Changes which may take place in Milk, Cream, Butter, &c.; Water Supply.

BACTERIOLOGY.

(a) General.—Bacteria, their Form, Classification, Growth and Reproduction; The Microscope and its Use; Staining and Microscopic Examination of Bacteria; Methods of Isolation and Cultivation; Preparation of Culture Media; Fermentations and Chemical Changes produced by Bacteria; Enzymes and their Action; Effects of Heat, Cold, Sterilization, Pasteurization, Disinfectants, and Preservatives on Bacteria and Enzymes.

(b) Dairy Bacteriology.—The Bacteria of Milk and Dairy Products; Examination of Milk for Foreign Bodies, Sediment, Blood, Pus, and Pathogenic Organisms; the Bacteriology of Milk, Cream, Butter, and Cheese; Commercial Bacterial Preparations for use in the Dairy; Bacteria Injurious to Dairy Produce: their Source, Nature, and Treatment; Bacterial and other Standards in relation to the Cleanliness of Milk.

(c) Fungi (Moulds) and Yeasts.—Their Forms, Classification, and Growth; their Relation to Dairy Produce.

5. INSTRUCTION.

Capacity to impart Instruction.—Organisation of Dairy Courses suitable to different Districts.

EXAMINATION FOR CHEESEMAKING CERTIFICATE.

The Association grants to any Candidate who satisfactorily passes the necessary Examination—

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking.

The Examination, which will extend over two or more days, will test the Theoretical Knowledge of the Candidates and their Practical Skill in Cheesemaking. Each Competitor will be required to answer, in writing, a set of questions within a given time, and will also be examined *viva voce*. On the same or following day a Practical Examination in Cheesemaking will take place.

Candidates will be considered to have passed the Examination if they obtain not less than 60 per cent. of the marks on each and every written paper and not less than 66 per cent. in the Practical test.

Candidates passing the Examination and obtaining 80 per cent. and over of the possible marks in the Practical Test will be excused the Practical Examination in Cheesemaking at the Diploma Examination. Notification of this exemption will be made by letter, as no endorsement to this effect is permitted on the Cheesemaking Certificate.

Candidates for this Certificate must, at the time of entry, produce satisfactory evidence that they have received at least twelve months' instruction in the Theory and Practice of Cheesemaking, of which at least six months must have been spent at a recognised centre for dairy instruction. They must possess a sound knowledge of the subjects included in the following Syllabus.

Candidates will be required to make one Hard-pressed Cheese, either Cheddar, Cheshire or Derby, to be selected by the Examiner, and one Blue-veined Cheese, either Stilton or Wensleydale, to be selected by the Candidate. They must also have a knowledge of the manufacture of other varieties of Hard-pressed Cheese and of Soft Cheese.

Candidates are at liberty to bring their own utensils for the Practical Examination if they wish to do so.

Examinations for Cheesemaking Certificates are held twice a year, viz., in the Spring and Autumn, upon dates announced in the Agricultural and Dairy Press.

Entries will close 28 days prior to the date fixed for the Examination.

The Entry Fee is 10s.

SYLLABUS.

1. Milk.—The Food Value of Milk ; The Yield of Milk from various Breeds ; Secretion of Milk and Structure of the Udder ; Milking by Hand and Machine ; Handling of Milk from Cow to Dairy ; Importance of Cleanliness ; Production of Highest Grade Milk ; Cooling of Milk ; Sale of Milk ; Influence of Food on the Yield, Flavour and Fat Contents of Milk ; Composition of Milk, Nature and Properties of its Constituents ; Differences between Morning and Evening Milk and their Causes ; Methods of

Sampling and Simple Methods of Testing Milk, as the Lactometer, Creamometer, and Centrifugal Fat Testers; Testing for Acidity; Causes of Fermentation; Colostrum, its nature and properties; the Keeping of Dairy Records; the Handling of Evening's Milk for Cheesemaking; Properties of Milk suitable for Cheesemaking; Taints in Milk, their Causes, Effects and Remedies; Tests for such Taints; the Ripening of Milk for Cheesemaking; Methods and Reasons for Ripening; use of Natural and "Culture" Starters; Pasteurization of Milk; Chilled Milk; their Subsequent use for Cheesemaking; Special Testing of Milk, Whey, and Curd requisite in a Cheese Dairy; Utilization of Dairy By-products.

2. Cheese.—Rennet: its Preparation, Properties, and Action upon Milk; Testing its Strength; Storage of Rennet; Substitutes for Rennet; Annatto; a General Knowledge of the Manufacture of the Principal Varieties of Hard-pressed, Blue-veined, and Soft Cheeses, including the use of wood and metal tubs and jacketed vats; Methods of Scalding; the Development and Control of Acidity in Curd; Salting and Brining in Cheesemaking; Bandaging; Ripening and Storing of Hard-pressed, Blue-veined and Soft Cheeses; Defects in Cheese and their causes; Composition of Cheese; Composition and Utilization of Whey; the Manufacture of Whey Butter; the Equipment of a Cheese Dairy and its Cost; the care of Utensils; the Detailed Principles and Practice requisite for the Manufacture of one of the following types of Cheese:—

- (a) A Hard-pressed British Cheese (not less than 25 lbs. weight).
 - (b) A Blue-veined British Cheese (not less than 10 lbs. weight).
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EXAMINATION FOR BUTTERMAKING CERTIFICATE.

The Association grants to any Candidate who satisfactorily passes the necessary Examination—

A Certificate of Merit for Proficiency in the Theory and Practice of Butter-making.

The Examination, which will extend over two or more days, will test the Theoretical Knowledge of the Candidates and their Practical Skill in Buttermaking. Each Competitor will be required to answer, in writing, a set of questions within a given time, and will also be examined *vis à voce*. On the same or following day a Practical Examination in Buttermaking will take place.

Candidates will be considered to have passed the Examination if they obtain not less than 60 per cent. on each and every written paper, and not less than 66 per cent. in the Practical Test.

Candidates passing the Examination and obtaining 80 per cent. and over of the possible marks in the Practical Test will be excused the Practical Examination in Buttermaking at the Diploma Examination. Notification of this exemption will be made by letter, as no endorsement to this effect is permitted on the Buttermaking Certificate.

Candidates for this Certificate must, at the time of entry, produce satisfactory evidence that they have received at least three months' instruction (not necessarily at a Dairy School) in the Theory and Practice of Buttermaking. They must possess a sound knowledge of the subjects included in the following Syllabus. They will be required to make Butter

Candidates are at liberty to bring their own utensils for the Practical Examination if they wish to do so.

Examinations for Buttermaking Certificates are held twice a year, viz., in the Spring and Autumn, upon dates announced in the Agricultural and Dairy Press.

Entries will close 28 days prior to the date fixed for the Examination.

The Entry Fee is 5s.

SYLLABUS.

1. Milk.—The Food Value of Milk; the Yield of Milk from various Breeds; Secretion of Milk and Structure of the Udder; Milking by Hand and Machine; Handling of Milk from cow to dairy; Importance of Cleanliness; Production of Highest Grade Milk; Cooling of Milk; Sale of Milk; Influence of Foods on the Yield, Flavour and Fat Contents of Milk; Composition of Milk, Nature and Properties of its constituents; Differences between Morning and Evening Milk and their causes; Methods of Sampling and Simple Methods of Testing Milk, as the Lactometer, Creamometer, and Centrifugal Fat Testers; Testing for Acidity; Causes of Fermentation; Colostrum, its nature and properties; the Keeping of Dairy Records.
2. Cream.—The Various Methods of Obtaining Cream; the Construction and Use of the Utensils employed; Separators, the Construction and Use of the various Types; Composition of Cream, Separated Milk, Skimmed Milk, and Butter-milk, with Simple Tests for Fat in same; the Ripening of Cream—Objects and Results; Changes during Ripening; Testing for Acidity; Natural and Artificial Ripening and Preparation of Starters; the Preparation of Cream for Churning; Preparation of Cream for Sale; Clotted Cream.
3. Butter.—The Various Methods of Obtaining Butter, including the Churning of Whole Milk; Utensils required, and the Preparation, Use, and Care of same; the Process of Butter Manufacture in all its details; Conditions which affect the Butter Yield; Circumstances affecting the Flavour, Texture, Colour, and Keeping Properties of Butter; Dry-salting and Curing of Butter; Faults in Butter and their causes; Composition and Properties of Good Butter; Composition and Causes of Inferior Butter; Methods of Judging Butter.

EXAMINATION FOR FACTORY MANAGER'S DIPLOMA.

Regulations and Syllabus, viz. :—

Candidates must hold the British Dairy Farmers' Association's Diploma or the National Dairy Diploma.

They must have subsequently spent at least six summer months in Factory dealing with not less than 500 gallons of milk daily.

Candidates will write answers to a paper and be examined orally and practically on the following :—

1. Factory : the Site, Construction, and Requirements of a Factory.
2. Lighting and Power in the Factory.
3. Boilers, Engines, Shafting, Fittings, and Apparatus, their disposition and control.
4. Maintenance and Cleansing of Factory and disposal of Waste.
5. Organisation of Labour and use of Labour-saving Devices.
6. Milk, management of, on arriving at Factory : Weighing, Sampling, Testing, Recording, Cleaning, &c.
7. Methods of dealing with the Milk for (a) Sale ; (b) Cream Production ; (c) Buttermaking ; (d) Cheesemaking ; (e) Other Products.
8. Refrigerating Machinery and its use.
9. Cold Stores and their Management.
10. Pasteurizing and Sterilizing Machinery and its use.
11. Cream, preparation of, for Market.
12. Butter : Manufacture and Treatment.
13. Cheese : Manufacture and Treatment.
14. Utilization of Bye-products.
15. Pig-keeping.
16. Business Management ; Book-keeping ; Stocktaking and Depreciation ; Contracts ; Railway Rates and Conditions ; Statements ; Notices, &c.
17. Law, so far as it affects the Factory, the Management, and the Produce, including main provisions of Factory and Workshop Act ; Workmen's Compensation ; Health Insurance ; Employers' Liability ; Rivers Pollution Act ; Industrial and Provident Societies Act ; Sale of Food and Drugs Act ; Milk and Dairies Acts, and other Legislation as it affects the Working of Factories and the Manufacture and Sale of Dairy Produce.

The Entry Fee for each Candidate is fixed at £4 4s.

Particulars and Entry Forms for all Examinations may be obtained from

THE SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

28, Russell Square, London, W.C. 1.

EXAMINATIONS

AT

LOCAL CENTRES.

In order to meet the convenience of Students at Dairy Schools, members of local Societies, and other persons, the Association will conduct Examinations for its Diplomas and Certificates at any place in the United Kingdom upon receiving satisfactory proof that the following conditions will be observed :—

That the School, Society, County Council, or other body requesting such an Examination to be held, undertake :—

- (1) To supply all necessary appliances and materials.
 - (2) To pay the fees and expenses of the Examiners.
 - (3) To supply the milk required free from preservatives and fit for Cheesemaking.
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Copies of Question Papers set at recent Examinations may be obtained at 3d. per copy.

Applicants are requested to state whether Diploma, Cheese, or Butter Questions are required.

Further particulars and Entry Forms for Students may be obtained from

The SECRETARY,

BRITISH DAIRY FARMERS' ASSOCIATION,

28, Russell Square, London, W.C. 1.

COMBINED DAIRY (EDUCATION) COMMITTEE.

Memorandum *re* Diploma and Certificate Courses in Dairying.

It is proposed to bring the following Diploma Syllabuses into force in October, 1925, so that the first Examination on these Syllabuses will take place in 1927. Amended regulations will be issued in due course.

On the invitation of the Council of the British Dairy Farmers' Association a meeting was held at the Agricultural Hall on Friday, 21st October, 1921, to consider what steps might be taken to improve the training and standard of examinations for Certificates and Diplomas in Dairying.

On the motion of Lord Bledisloe, seconded by Mr. Burkitt, the following resolution was passed:—

“That a Committee be forthwith constituted to consider in what directions, if any, the conditions now regulating the training and examinations for the various Certificates and Diplomas require amendment.”

It was suggested that the Committee might consist of representatives of the Royal Agricultural Society, the Highland and Agricultural Society, the British Dairy Farmers' Association and certain educational institutions, with power to add to its number.

The Committee was primarily constituted as follows:—

Ernest Mathews, Esq., C.V.O., L.L.D., representing The Royal Agricultural Society of England.

Chas. Douglas, Esq., C.B., D.Sc., representing The Highland and Agricultural Society.

J. Benson, Esq., representing The British Dairy Farmers' Association.

Prof. H. A. D. Neville, M.A., representing The University College, Reading.

Wm. Goodwin, Esq., Ph.D., representing The Midland Agricultural and Dairy College.

S. H. Gater, Esq., M.A., representing The Lancashire County Council Dairy School.

Prof. W. G. R. Paterson, B.Sc., representing The West of Scotland Agricultural College.

Prof. A. E. Jones, B.Sc., representing the University College of Wales.

Prof. R. G. White, B.Sc., representing the University College of North Wales.

Principal D. R. Edwardes-Ker, O.B.E., M.A., representing The Seale Hayne Agricultural College.

Alexander Hay, Esq., N.D.A., N.D.D., representing The East Anglian Institute of Agriculture.

The following members were also appointed to serve on the Committee :—

Prof. R. Stenhouse Williams, M.B., B.Sc., J. Mackintosh, Esq., O.B.E.,	{ National Institute for Research in Dairying.
Alec Todd, Esq., representing The Agricultural Education Association.	

Dr. Goodwin has since resigned from the Committee and has been succeeded by Dr. Milburn, while Mr. J. J. Green, B.Sc., Secretary for Agriculture to the Lancashire County Council, has acted on behalf of Mr. Gater.

The first meeting of the Committee was held in the Council Rooms of the British Dairy Farmers' Association on the 27th April, 1922, and after a brief discussion on courses in Dairying at present in existence, it was decided to make a complete review of Dairy Courses and Dairy Examinations in existence at the present time, which has involved twelve meetings of the Committee and Sub-Committees, and as a result of this detailed survey, the following recommendations are put forward by the Committee for Diploma Courses in Dairying and Certificate Courses in Dairy Factory Management.

DIPLOMA IN DAIRYING.

The Committee recommend that for a Dairy Diploma Examination five foundation papers are necessary, and the papers suggested are :—

1. Dairy Farming and Dairy Hygiene.
 - (a) Dairy Farming.
 - (b) Dairy Hygiene.
2. Dairying.
 - (a) Principles of Dairying.
 - (b) Dairy Factory Management and Dairy Engineering.
3. Dairy Chemistry.
 - (a) General Chemistry and Physics.
 - (b) Dairy Chemistry.
4. Dairy Bacteriology.
5. Dairy Book-keeping.

In addition, all candidates will be required to demonstrate their practical skill.

DURATION OF COURSE.

They further recommend that the duration of a Diploma Course in Dairying be two academic years, this period to include six months' practical instruction in Dairying.

PRACTICAL FARM WORK.

They also recommend that a candidate for a Diploma in Dairying produce evidence that he or she has spent at least six months on a recognised Dairy Farm, and that he or she has taken part in the work of the farm: such practical work to be in addition to the two years of study outlined in the above recommendation.

TYPE OF COURSE SUGGESTED.

For a Diploma Examination on the lines suggested the Committee recommend a course of instruction on the following lines:—

PAPER 1. DAIRY FARMING AND DAIRY HYGIENE.

A. Dairy Farming.				Approximate number of hours.	
				Lectures.	Practical Work.
(1) Dairy Cattle and Milk Production	...	...	...	60	—
(2) Management of Pigs	...	...	...	10	—
(3) Soils and Cultivation	...	...	...	20	—
(4) Plant Physiology	...	...	...	20	—
(5) Crop Management	...	...	...	40	—
(6) Farm Management	...	...	...	10	—
(7) Dairy Economics	...	...	...	10	—
				170	—
B. Dairy Hygiene.					
(1) Animal Physiology	...	...	...	50	—
(2) Veterinary Hygiene	...	...	...
(3) Milk Hygiene	...	...	...

PAPER 2. DAIRYING.

A. Principles of Dairying				60 and at least six months' practical instruction at a recognised Dairy Centre.
B. (1) Factory Practice and Management				20
(2) Dairy Engineering				20

PAPER 3. DAIRY CHEMISTRY.

A. General Chemistry and Physics	...	75	100
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B. Dairy Chemistry (including Animal Nutrition)	...	60	80
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PAPER 4. DAIRY BACTERIOLOGY	...	60	100
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PAPER 5. DAIRY BOOK-KEEPING	...	60 hrs. instruction.	
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SYLLABUS OF SUBJECTS OF EXAMINATION.

The Committee recommend the following Syllabus of Examination as one which covers the instruction necessary for a Diploma Course on the lines suggested in the above recommendation :—

1. DAIRY FARMING AND DAIRY HYGIENE.

(a) DAIRY FARMING.

Dairy Cattle.—Characteristics of different breeds and choice of dairy cattle. The milk yields of the more important breeds, and suitability for the milk trade, cream, butter and cheese production.

Foods and Feeding.—Summer and winter feeding of dairy cattle. Root and fodder crops. Green forage. Ensilage. Different kinds of food and their relative composition. The effect of food upon milk, butter and cheese. Special foods used for dairy stock. Preparation of food for dairy stock. Feeding of calves and young stock.

Housing and Management.—The situation, chief dimensions and construction of cow houses; ventilation, drainage, water supply. Systems of herd management, including management of herd bulls and in-calf heifers. Cattle breeding and grading up of dairy stock. Systems of calf rearing. The housing and management of young stock.

Milk Recording.—Systems and utilization of results. Details of official schemes.

Milk Production.—Factors influencing the yield and quantity of milk. Milking by hand and machine. Location and equipment of farm dairies. The production and sale of clean milk. The treatment of milk from the cow to the milk factory or consumer.

Management of Pigs.—Characteristics of the more important breeds. Feeding of pigs. The management of sows and breeding stock. Farrowing, weaning, rearing and fattening of pigs. Systems of pig keeping, including outdoor management. The production of pork and bacon.

Soil and Cultivation.—Types of soils suitable for dairying. Fertility in soils. Soil cultivation. Manures and manuring of arable and grass land.

Plant Physiology.—Fruits and seeds of agricultural plants. Roots and shoots. Flower construction and seed formation. Experiments to demonstrate the fundamental facts of plant physiology.

Crop Management.—Rotations and systems of cropping. Cultivation, manuring and management of roots, forage and other crops used in dairying. Silage crops. Temporary and permanent pasture. Haymaking.

Farm Management.—Systems of dairy farming. The selection, stocking and equipment of typical farms. The organization of the farm and disposal of produce. Cost of milk production.

Dairy Economics.—The dairy industry of Great Britain and its relationship to agriculture. The relative importance of the various products. The retail milk trade. Markets. Dairy organization and co-operation. Modern developments in the dairy industry. American, Colonial and Continental dairying.

(b) DAIRY HYGIENE.

Animal Physiology.—General functions of the organs of the animal body. Breeding. Parturition. The structure of the udder and the process of milk secretion. Changes which food undergoes during digestion.

Veterinary Hygiene.—The more important diseases of dairy cattle and their remedies. The transmission and eradication of disease.

Milk Hygiene.—Sanitary conditions. Air space and ventilation. Suitability of water supply, temperature, &c. Methods of milking and handling of milk. Transportation. Prevention of contamination. Pasteurization. Sterilization. Legislation affecting milk production. Milk in relation to public health.

2. DAIRYING.

(a) PRINCIPLES OF DAIRYING.

Milk.—Condition on delivery. Use of utensils and appliances. Cooling of milk. Importance of cleanliness. Keeping of milk. Legal standards. Methods of utilization of milk and their comparative returns.

Milk Testing and Sampling.—The use of the Gerber and Babcock fat testers. Lactometer readings. Scale readings. Sample of milk for testing. Interpretation of results.

Cream.—Separators and their management. Different systems of cream raising and ripening of cream. Changes during ripening. Natural and artificial ripening and preparation and uses of starters. Preparation of cream for sale. Use of preservatives. Clotted cream.

Butter.—Churns and buttermaking appliances. Preparation of cream for churning. Washing and working butter. Butter milk. Packing and transmission of butter. Selection and keeping of butter. Salting. Use of preservatives. Characteristics of good butter and method of judging. Circumstances affecting the flavour, texture, colour and keeping qualities of butter. Potting butter for keeping. Causes of inferior butter.

Cheese.—Principles of manufacture. Appliances for cheesemaking. The making of the principal varieties of British, Colonial and Continental cheese from cream, whole milk and skim milk. Acidity of milk. Common tests for acidity. Use of rennet and its substitutes. Whey. Ripening and storage of cheese. Packing and sale of cheese. Making of cream and other soft cheese. Defects in cheese and their causes. Judging cheese.

Dairy By-Products.—Composition, uses and value of skim milk, butter-milk and whey.

(b) DAIRY FACTORY MANAGEMENT AND DAIRY ENGINEERING.

Factory Practice.—Milk depôts and handling of factory milk. Systems of cooling and refrigeration. Pasteurization. Factory butter and cheese making. Milk Powders. Condensed milk. Frozen milk. Ice cream. Dried casein. Fermented milk. Lactose and whey-butter. Margarine manufacture. Equipment of milk depôts, butter, cheese and dairy factories.

Factory Management.—Factory routine. Organization of labour. Handling of milk on arrival at the factory. Methods of dealing with the milk. Milk contracts. Dairy factory legislation.

Production of Power.—The various forms of energy as used for the production of power.

Machinery.—Care and management of engines and boilers. Power transmission. Construction and use of dairy factory machinery. Refrigerating machinery.

Dairy Appliances.—Appliances used in the production and handling of milk, butter, and cheese making. Milk testing apparatus.

Buildings.—Situation, construction and drainage of creameries, milk depôts and dairy factories.

3. DAIRY CHEMISTRY.

(a) GENERAL CHEMISTRY AND PHYSICS.

General Principles of Chemistry.—The nature of elements and compound bodies. The different forms of matter, solid, liquid, gaseous. Specific gravity and instruments for determining it. Specific heat. Temperature and methods of measuring it. Thermometric scales. The influence of temperature in dairy operations. Physical and chemical changes involved in the following: Solution, precipitation, filtration, distillation, oxidation and reduction. Acids: Bases; Salts: their distinctive properties and quantitative estimation. Examination and identification of specimens and apparatus.

The Atmosphere. Its constituents and impurities; its influence on dairy operations. Atmospheric pressure.

Water. Constituents of pure and natural waters. The impurities of water and whence derived. The importance of a pure water supply in dairying.

Inorganic and Organic Chemistry. General knowledge of the elementary chemistry of the following substances and their compounds so far as met with in dairying: Potash, soda, ammonia, lime, phosphoric acid, alcohol, acetic acid, carbonic acid, butyric acid, lactic acid, albumen, casein, fats, milk-sugar, glycerine, pepsin, saponification of fats.

(b) DAIRY CHEMISTRY.

Chemistry of Milk. The nature, composition, properties and chemical constituents of milk. Microscopical appearances presented by milk. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and use.

Milk Products. Physical and chemical changes involved in the making and keeping of butter and in the manufacture and ripening of cheese. Separated milk. Condensed milk. Fermented milk. Synthetic milk. The use of preservatives.

Dairy Analysis.—Analytical methods, their theory and practices. A general knowledge of the methods employed in the chemical analysis of milk, butter and cheese. Adulteration of milk, cream, butter and cheese, the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

Chemistry of Feeding.—The principal constituents of food materials and the functions they severally fulfil. The influence of food constituents on milk production. Assimilation and digestion. The manurial value of foods. Milk and milk products as foods.

4. DAIRY BACTERIOLOGY.

General Bacteriology.—Bacteria; their form, classification, growth and reproduction. The microscope and its use. Staining and microscopic examination of bacteria. Methods of isolation and cultivation. Preparation of culture media. Fermentations and chemical changes produced by bacteria. Enzymes and their action. Effects of heat, cold, sterilization, pasteurization, disinfectants and preservatives on bacteria and enzymes. Bacteriological examination of water supplies.

Bacteriology of Milk.—The changes produced by bacteria in milk. Useful forms and their functions. Harmful forms and their effects. Coagulation, discolouration, taints, &c. Bacteriological and other standards in relation to the cleanliness of milk.

Milk Products.—The bacteria concerned in the ripening of cream and butter making. “Starters”: their preparation and management. The ripening of hard, soft and blue-veined cheese. Bacteria injurious to milk products, including condensed and dried milk.

Dairy Mycology.—Moulds and yeasts in dairy practice. Their form, classification, growth and relation to dairy products.

5. BOOK-KEEPING.

General Principles.—Principles of double entry book-keeping. Use of diary, journal, cash book and ledger. Posting to ledger. Preparation of profit and loss account and balance sheet. Systems of valuation.

Farm Book-keeping.—Application of the principles of book-keeping to dairy farming and to the sale of milk in bulk or by retail. Milk ledgers and customers’ accounts.

Factory Accounts.—Methods of book-keeping as applied to milk depôts and dairy factories.

Business Management.—General office work. Banking and use of cheques.

CERTIFICATE IN DAIRY FACTORY MANAGEMENT.

The Committee recommend that the most desirable course for Factory Managers is as follows:—

1. The possession of an approved Dairy Diploma.
2. Six months’ practical instruction at an approved dairy factory.
3. Possession of a Certificate obtained by examination.

EXAMINATION IN FACTORY MANAGEMENT.

The Committee make the following recommendations with regard to an Examination in Dairy Factory Management.

1. That a candidate be examined in two papers as outlined in the Syllabus submitted.
2. That the said candidate be examined orally in Factory Management with reference to the type of factory in which the practical training has been obtained.
3. That the said candidate submit full notes of the work which has been carried out in the factory in which the practical experience has been obtained, and such notes to be submitted to the examiners for inspection.

SYLLABUS OF EXAMINATION.

The following Syllabus of Examination is recommended for those students who have obtained a Diploma in Dairying and wish to take the Factory Managers' Certificate. The Committee are of opinion that this Syllabus should not be viewed from a purely engineering standpoint, but students will be expected to have a general knowledge of the management of factory machinery :—

PAPER 1. PLANNING, EQUIPMENT AND MANAGEMENT OF A DAIRY FACTORY.

Dairy Factories.—Site, building materials, construction, laying of floors, lighting, ventilation, drainage, sanitation, disposal and treatment of sewage and factory waste. Space requirements for the common types and sizes of factories.

Water Supply.—Water requirements ; sources of supply. Examination for quality and purity. Methods of purification. Suitability of water supplies for dairy purposes. Sites for wells. Construction of wells. Artesian wells. Pumps for deep and shallow wells. Air lift pumps.

Factory Equipment.—Artificial lighting and sources of power in the factory. Equipment required for various types of factories and approximate cost of same. The disposition and control of factory machinery.

Steam Plant.—Types of vertical and horizontal boilers and their relative advantages and disadvantages. Sizes of boilers required in dairy factories. Evaporating power of boilers. Setting and insulation. Cleaning out of boilers. Economical firing. Fuel used, *e.g.*, coal, coke and wood. Cost and calorific value. Fuel consumption and cost of steam production. Allocation of steam supply to different purposes in the factory. Boiler smoke stacks and their construction. Boiler fittings, including donkey pumps and water injectors. Feed heaters. Methods of economising steam supply.

Factory Machinery.—Steam, gas and oil engines. Electric motors, turbines, water power, comparison of the various types and their relative efficiency. Construction and working of the various types. Cost of maintenance. Power requirements of the factory and the most suitable combinations of power when different sources of energy are available. The management and fitting up of machinery, including electric fittings. Adjustment of bearings. Packing of glands. Fixing of brackets, &c. Lubrication of machinery. Oil containers and filters. Lubricants. Lubrication of high speed machinery. Oils and grease for shafting. Arrangement of machinery and methods of transmitting power. Belts, types and uses. Repairs to belting. Pulleys and gearing. Methods of increasing and reducing speed. Labour-saving devices. Tools required for a dairy factory.

Factory Plants.—Construction and operation of milk apparatus, including clarifiers, pasteurisers, separators, milk pumps, refrigerators, &c. Refrigerating machinery, CO² and ammonia. Methods of operation and management. Cold storage and brine cooling. Efficiency in the transfer of heat in heating and cooling apparatus. Methods of carrying out efficiency tests under different conditions and outputs. Factory appliances, including cheese vats, holding vats, power churns, bottling machinery and other factory equipment. Their approximate cost and suitability of the various types. Methods of cleaning equipment, utensils and milk churns.

Factory Management.—Organisation of labour. Business management. Book-keeping. Cost accounts. Profit and loss in manufacturing. Stock-taking and depreciation. Railway rates and conditions. Road transport. Systems and comparative costs. Advertising. Markets and sale of produce. Co-operative organization.

Factory Law.—Law as far as it affects the factory, the management and the produce. Factory and Workshops Act. Workmen's Compensation. Health Insurance. Employer's Liability and Trade Boards Acts. Industrial and Provident Societies Act. Rivers Pollution Act. Sale of Foods and Drugs Act. Milk and Dairies Acts, and other legislation as it affects the working of factories and the manufacture and sale of dairy produce.

PAPER 2. HANDLING AND UTILIZATION OF MILK AND MILK PRODUCTS.

Handling of Milk.—Purchase, collection and distribution of milk. Management of milk on arrival at the factory. Weighing, sampling, testing, recording and cleaning. Methods of paying for milk and cream.

Utilization of Milk.—Methods of dealing with milk for sale for cream production, butter-making, cheese-making and for the manufacture of other products.

Factory Products.—Preparation of cream for market. The manufacture and treatment of butter and cheese. Manufacture of condensed and powdered milk, casein and milk sugar, &c. Ice cream manufacture, &c. The utilization of by-products.

Pig Keeping.—Feeding and management of pigs. The production of pork and bacon. Bacon curing.

In the opinion of the Committee the Syllabus and the training conditions proposed above indicate the general principles on which the awarding of Diplomas should be based. The Committee do not desire to insist on all the arrangements in detail, but they believe that the subjects mentioned ought to be included in every examination for a Diploma, and the amount of practical training required ought to be regarded as a minimum by all examining Bodies. The Committee

think that it is of great importance that a high standard should be maintained in the more elementary and preparatory scientific examinations.

The Committee desire to place on record their appreciation of the excellent work done by Mr. Alexander Hay, who has acted as their Honorary Secretary. His unfailing courtesy and ready resource in discussing the various questions that have come before them rendered their task comparatively easy.

(Signed) ERNEST MATHEWS, *Chairman.*

CHARLES DOUGLAS.	A. E. JONES.
JOHN BENSON.	R. G. WHITE.
H. A. D. NEVILLE.	D. R. EDWARDS KER.
THOS. MILBURN.	R. STENHOUSE WILLIAMS.
J. J. GREEN.	JAMES MACKINTOSH.
WILLIAM G. R. PATERSON.	ALEC TODD.

ALEXANDER HAY, *Hon. Secretary.*

31st July, 1923.

EXAMINATION RESULTS, 1924.

EXAMINATION FOR BUTTERMILKING AND CHEESEMAKING CERTIFICATES AT THE BRITISH DAIRY INSTITUTE, READING; ON MONDAY, TUESDAY, WEDNESDAY, THURSDAY AND FRIDAY, JUNE 23RD, 24TH, 25TH, 26TH AND 27TH.

A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Gladys M. Abbott, Mary W. Allen, Arthur Andrews, Lena R. Ault, Theodora F. Barton, Violet Blow, Margaret A. Brackenbury, Gertrude C. Burt, Marion A. Cautrey, Eric E. P. Chomé, Alfred J. G. Clay, Norman J. S. Clay, Richard L. Coates, Eustace Colson, H. Gordon Cook, Margaret B. H. Cox, Rosalind Ellershaw, Mary E. Fairfax-Cholmeley, Barbara M. A. Fischer, Evelyn E. Fuller, Alan V. Gibberd, Charles R. Greenwood, May Halliday, Enid M. Hallum, Marianne C. Helps, Basil Hibbett, Richard S. Higham, Isabel M. Hudson, Walter G. Jones, Mary A. Leighton, Ella Leslie, Maurice B. Lister, Kathleen A. Marriott, Jocelyn M. Martin, Arthur D. Mouncestephens, Andrew T. Paton, Joyce Paton, Marjorie R. Pavey, Margaret Robinson, Bernard R. L. Ross, Alarie W. Rowntree, Robert J. H. Seal, Zipporah Shertock, Arthur L. Stickland, Roland S. Sullivan, Marjorie I. Summerhill, Richard A. Weekes, Arthur P. Weller, Frederick C. White, Edith E. Willey, Doris Williams, James L. H. Williams and John D. P. Willson.

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Arthur Andrews, Olive M. Barnard, Alfred J. G. Clay, Norman J. S. Clay, Eustace Colson, H. Gordon Cook, Margaret B. H. Cox, Barbara M. A. Fischer, Paul B. W. Gates, Alan V. Gibberd, Charles R. Greenwood, May Halliday, Enid M. Hallum, Basil Hibbett, Walter G. Jones, Ella Leslie, Maurice B. Lister, Marion A. Maxwell, Dorothea I. M. Mayes, Eleanor F. McIntosh, Marjorie R. Pavey, Margaret Robinson, Bernard R. L. Ross, Robert J. H. Seal, Arthur L. Stickland, Roland S. Sullivan, Arthur P. Weller, Frederick C. White, Doris Williams, James L. H. Williams and Gladys M. Woods.

EXAMINATION FOR BUTTERMILKING AND CHEESEMAKING CERTIFICATES AT STUDLEY COLLEGE, STUDLEY; ON WEDNESDAY AND THURSDAY, JUNE 25TH AND 26TH.

A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Mollie Davies-Cooke, Alison F. Fraser, Greeba Graves, Betty B. Morris and Stella M. Peters.

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Muriel Gascoigne and Averil Stirling.

EXAMINATION FOR BUTTERMILKING AND CHEESEMAKING CERTIFICATES AT THE DAIRY DEPARTMENT, COUNTY LABORATORIES, CHELMSFORD; ON MONDAY, TUESDAY AND WEDNESDAY JULY 21ST, 22ND AND 23RD.

A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Malcolm Brittain, James M. Brown, John Dyson, William F. Heathfield, William H. Mayo, Phyllis Rigby, Olive J. Robison, Anthony Skelton and Barbara L. Withycombe.

A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to John Dyson, William H. Mayo, Phyllis Rigby, Olive J. Robison, Anthony Skelton, and Barbara L. Withycombe.

EXAMINATION FOR DIPLOMA, BUTTERMaking AND CHEESEMAKING
CERTIFICATES AT THE BRITISH DAIRY INSTITUTE, READING;
ON MONDAY, TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER
15TH, 16TH, 17TH AND 18TH.

- A Diploma, with Honours, and Silver Medal for Proficiency in the Science and Practice of Dairying to Barbara M. A. Fischer, Alan V. Gibberd, Doris E. Naish, George A. M. Reed, Arthur L. Stickland and Frederick C. White.
- A Diploma and Silver Medal for Proficiency in the Science and Practice of Dairying to Hilda M. Balch, Vena M. Bebb, Millicent N. Blackman, Alfred J. Carter, Norman J. S. Clay, H. Gordon Cook, Margaret B. H. Cox, Margerie Evans, Edith Fraser, Winifred K. Fuller, Paul W. B. Gates, Charles R. Greenwood, Basil Hibbett, Bernard H. Hunt, Owena Jenkins, Walter G. Jones, Ethel Lunt, Marion A. Maxwell, Eleanor F. McIntosh, Marjorie R. Pavey, Margaret F. Robinson, Phyllis Stewart, Marjorie Stitch, Roland S. Sullivan, Hilda M. Turner, Arthur P. Weller and Gladys M. Woods.
- A Certificate of Merit for Proficiency in the Theory and Practice of Buttermaking to Joyce O. Chessum, Henry B. Grimsdell, Eric S. Williams and Frances L. G. Wilson.
- A Certificate of Merit for Proficiency in the Theory and Practice of Cheesemaking to Mary W. Allen, Theodora R. Barton, Ruth M. Brinkler, G. Cecilia Burt, Joyce O. Chessum, Richard L. Coates, Dorothy J. Coleman, Mollie Davies-Cooke, Rosalind Ellershaw, Marianne C. Helps, Richard S. Higham, Mary A. Leighton, Jocelyn M. Martin, Kathleen A. Marriott, Andrew Paton, Joyce Paton, Zipporah Shertok and Rutherford W. C. Smith.

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY, AND THURSDAY, JUNE 23RD,
24TH, 25TH, AND 26TH, 1924.

EXAMINER :
W. J. GRANT.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. What is cream? Why does it accumulate on the surface of milk? Why, usually, do you obtain more cream by the use of a separator than by the old system of hand-skimming the milk?
2. What system would you adopt with the object of detecting the addition of water or the abstracting of cream in respect of cream received at a dairy?
3. How would you prepare a "starter" for buttermaking? Do you consider the starter an important factor in connection with the manufacture of milk products? Give your reasons.
4. Give a suitable scale of points for judging butter.
5. What benefits are likely to follow a free admission of fresh air to all the premises connected with the dairy and the cattle sheds?
6. Give some information as to points and character that you would look for in a first-class dairy cow.
7. What are some of the advantages of keeping a milk record?
8. What is the Statutory Standard of water in butter? What is the Statutory Standard of total solids in milk?
9. You receive an order for a quantity of mild-cured butter. What percentage of salt would you require to satisfy your customer?
10. Describe the process of how to manufacture Devonshire or clotted cream?

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY, AND THURSDAY, JUNE 23RD,
24TH, 25TH, AND 26TH, 1924.

EXAMINER :

MISS M. M. MACQUEEN.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *vis à voce*.

QUESTIONS.

1. What are the chief faults in milk produced under unclean conditions? What precautions would you take to avoid these?
2. How would you sample milk when buying for a cheese factory? And what methods of testing would you employ?
3. What difference would you expect to find in Cheddar cheese made under exactly similar conditions from the milk of (a) Ayrshire cows; (b) Jersey cows.
4. When purchasing a milk cooler, what are the points you would particularly observe?
5. State the percentages of acidity you prefer at different stages when making (a) Derby cheese; (b) Wensleydale cheese.
What is the effect of too high or too low an amount at the different stages?
6. What are the principal causes of loss of butter fat in (a) the whey; (b) the cheese press?
7. What differences would you make in the manufacture of (a) Early-ripening Cheshire cheese; (b) Long-keeping Cheshire cheese?
8. What differences would you make in the manufacture of (a) Whole milk cheese; (b) Skim milk cheese? What is the lowest percentage of fat you consider necessary to make a good cheese?
9. What are the changes which take place in ripening a hard-pressed cheese, and what precautions have to be taken in ripening to get the best results?
10. Describe how you would judge a Cheddar cheese and a Wensleydale cheese?

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT THE
STUDLEY COLLEGE, WARWICKSHIRE; ON TUESDAY
WEDNESDAY AND THURSDAY, JUNE 24TH, 25TH, AND
26TH, 1924.

EXAMINER :

MISS M. KNOWLES.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. What precautions would you take in the cowshed, and in the dairy, against infection of milk by undesirable bacteria ?
2. Explain how you would test milk for quality, and ascertain its condition and flavour.
3. Why is milk such a valuable food ? What do you know about "Grade A" milk ?
4. What points should be observed in working a separator ? What advantage has separated over skimmed cream ?
5. Taking milk straight from the cow, what difference would you make in the treatment of it when required (1) for cheesemaking ; (2) for buttermaking ; and (3) for selling.
6. Why is "ripened" cream considered best for buttermaking ? Describe the process of "ripening."
7. What should be the characteristics of a good starter ? Which of the following would you prefer to use, and why ?—
 - (1) Butter milk from last churning ;
 - (2) New milk soured naturally ;
 - (3) Starter made from a pure culture of lactic bacillus.
8. Give the main points to be observed in churning and making up butter.
9. Give your views as to the feeding and rearing of calves—on a farm where milk is sold, and on one where cheese is made.
10. Give three of the common defects of butter, and state how they may be avoided.

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT THE
STUDLEY COLLEGE, WARWICKSHIRE; ON TUESDAY,
WEDNESDAY AND THURSDAY, JUNE 24TH, 25TH, AND
26TH, 1924.

EXAMINER :
MISS M. KNOWLES.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. What breed of cow would you prefer to keep, and how would you feed, when producing milk for cheesemaking. Give reasons ?
2. How would you treat your evening's milk for farmhouse cheesemaking ? What essential difference should there be between this and milk received at a factory for cheesemaking ?
3. Describe shortly the making of one variety of "Hard" cheese, preferably Cheddar, and state the points of difference to be observed in producing a slow or a quick-ripening cheese.
4. What are the characteristics of a good ripe Cheddar cheese. How should these cheeses be treated during ripening ? Say how this process can be hastened or retarded.
5. What is a starter ? Give its characteristics and a short account of its preparation.
6. Give your method of testing milk for acidity previous to renneting. State how you would deal with milk which was either over-ripe or under-ripe.
7. Describe the method of making either a soft or a blue-veined cheese (choose your variety). Under what circumstances would you recommend these cheeses to be made ?
8. What is the most variable solid of milk ? Show how the solids in milk are divided up during cheesemaking. What percentage of fat would you find in an average milk. What proportion passes off in the whey ? What causes undue loss of fat ?
9. What may be the cause of the following defects in cheese :—
 - (1) Discolouration ;
 - (2) Pasty or weak texture ;
 - (3) Hard, dry, gritty texture ;
 - (4) Poorness of quality ;
 - (5) Off flavours.
10. Give some accounts of the "bacteria" essential to the making and ripening of cheese, as well as those likely to cause trouble.

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT
THE DAIRY DEPARTMENT, COUNTY LABORATORIES,
CHELMSFORD; ON MONDAY, TUESDAY, AND WED-
NESDAY, JULY 14TH, 15TH, AND 16TH, 1924.

EXAMINER :
W. J. GRANT.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. Describe the process of milking a cow ; how it should be carried out ; the precautions that should be taken as to cleanliness, &c., of the cow's udder and teats, and the milker's hands.
2. What steps would you advise a dairy farmer to take in order to increase the quantity and improve the quality of the milk from his cows ?
3. Why, if possible, must we have abundance of fresh air in the various buildings in which milk is kept or made up into butter or cheese ?
4. In what ways would you ascertain the quality of samples of milk for trade purposes ?
5. What are the chief points to be attended to during the ripening of cream, and what results from cream being over-ripened or too sour ?
6. What do you know of the Gerber method of milk testing ? Describe the process.
7. Describe a cream separator with which you are acquainted. What are the principle points to be observed in connection with the successful management of a cream separator ?
8. What would you recommend as a suitable fat-content in cream for churning. The objection to cream too rich in fat ?
9. To be successful in producing the best butter it is necessary to have a supply of pure, sound milk. What part of your management would require to be most carefully looked into to produce milk of this character ?
10. What are the principle features of a fine sample of butter ? How would you arrange the scale of points suitable for judging ?

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT
THE DAIRY DEPARTMENT, COUNTY LABORATORIES,
(CHELMSFORD); ON MONDAY, TUESDAY, AND WED-
NESDAY, JULY 14TH, 15TH, AND 16TH, 1924.

EXAMINER :
W. J. GRANT.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. Give a brief description of the ways in which a knowledge of bacteriology may be useful to you in a cheesemaking dairy ?
2. How do you decide when milk is ready for renneting, and the curd ready for putting to press ?
3. Which of the several compounds contained in milk do we retain, and which let loose in the manufacture of cheese, and which in butter ?
4. Describe the manufacture of a blue-veined cheese, mentioning the acidities during the process.
5. Explain the various "ripening" processes that are supposed to take place in the manufacture of cheese from the milk vat to the cheese shelf.
6. Describe points of merit which all good "starters" should possess. How do you prepare and renew a "starter?" What quantity would you use for 100 gallons of milk.
7. Describe the principles of the manufacture of soft cheese. Give a short account of the making of a soft cheese to be sold in a fresh state, and also of cream cheese.
8. What is the difference between the curd formed in the ordinary souring of milk and the curd formed by milk ?
9. A farm carrying 20 cows is worked as a cheese farm. Describe the points of the cheesemaking room and the implements that should be found therein.
10. Describe one well-known and easily practised method, which could be done in every cheesemaking dairy, of ascertaining the acidity of milk without much initial outlay.

EXAMINATION FOR DIPLOMA AT THE BRITISH DAIRY
INSTITUTE, READING; ON MONDAY, TUESDAY,
WEDNESDAY AND THURSDAY, SEPTEMBER 15TH, 16TH,
17TH, AND 18TH, 1924.

EXAMINER :

T. J. DRAKELEY, Ph.D., F.I.C., F.C.S.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

CHEMISTRY AND BACTERIOLOGY.

1. Describe in detail the method you would employ to determine the percentages of fat and solids-not-fat in a sample of *sour* milk.
2. How is annatto obtained? How is it used in artificially colouring cheeses and butter?
3. What are the principal constituents of the atmosphere? Explain how the barometer records the pressure of the air, and indicate the value of this instrument to farmers.
4. Write a short essay on *one* of the following subjects:—(a) rennet; (b) clean milk production; (c) nitrogenous manures; (d) the use of a thermometer in cheesemaking.
5. How does the pasteurisation of milk affect its (a) taste, (b) "cream line," (c) antiscorbutic vitamin, (d) bacterial content.
6. In cheesemaking, lactic acid is produced by the action of bacteria. How would you encourage the rapid production of lactic acid and estimate the quantity so formed? What percentage of acid should be present in the milk when it is ready for the addition of the rennet?
7. What are the most probable causes of taints and bad flavours in cheese and butter? If you were in charge of a factory what steps would you take to deal with this difficulty?
8. Describe the method you would adopt in examining a sample of milk for *bacillus coli*. What is the value of such an investigation?

EXAMINATION FOR BUTTERMILKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER
15TH, 16TH, 17TH, AND 18TH, 1924.

EXAMINERS :

T. J. DRAKELEY, Ph.D., F.I.C., F.C.S., and W. BURKITT, B.Sc.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *vice versa*.

QUESTIONS.

1. Describe the steps you would take (up to placing the cream in the churn) to obtain the best quality of butter.
2. What are the most common errors in churning, and how would you avoid them ?
3. How would you judge a sample of butter ?
4. Contrast the butter yields of the milk given by the various British dairy breeds.
5. Describe fully what you consider is the most up-to-date butter churn.
6. Enumerate the taints most usually found in butter. How are they caused, and how can you prevent or get rid of them ?
7. Discuss as fully as possible the methods of salting butter.
8. What are the advantages of a "starter" in buttermaking, and how would you use it ?
9. What are the causes of "sleepy cream" ? How would you endeavour to remedy this condition if it arose ?
10. Give the composition of an average sample of butter, and state in what manner and why this composition may vary.

EXAMINATION FOR CHEESEMAKING CERTIFICATE AT THE
BRITISH DAIRY INSTITUTE, READING; ON MONDAY,
TUESDAY, WEDNESDAY AND THURSDAY, SEPTEMBER
15TH, 16TH, 17TH AND 18TH, 1924.

EXAMINERS :

T. J. DRAKELEY, Ph.D., F.I.C., F.C.S., and MISS M. M. MACQUEEN.

Three hours are allowed for this paper.

Candidates are requested to make their answers as brief as possible. Each answer should be written on a separate sheet of paper, and the sheets should be fastened together in order in the left-hand corner. The top sheet should bear the name of the Candidate.

Each question carries the same number of marks, and Candidates gaining over 60 per cent. will pass.

Candidates will subsequently be examined *viva voce*.

QUESTIONS.

1. Describe the type of milk strainer you consider the most effective, and why ?
2. Describe the milk churn you would select for sending milk to factory by rail. Give present cost of same.
3. What is rennet, and how would you select it for cheesemaking ?
4. What is a starter ? If you were unable to purchase a good one how would you make one ?
5. How would you treat an over-acid quantity of milk in cheesemaking, and what variety of cheese would you prefer to make from this milk ?
6. Under what circumstances would you pasteurise milk for cheesemaking, and what precautions would you take ?
7. What amount of ripe cheese would you expect to get from 100 gals. of milk containing 3.5 per cent. of fat when made into Cheshire, Stilton or Coulommier ?
8. What is the average percentage of loss from Cheddar and Stilton cheese between the time the curd is put into the moulds and when ripe ?
9. What equipment would you require for a dairy making 100 gals. of milk daily into hard-pressed cheese ? Give cost of same.
10. How would you dispose of the by-products of a dairy making 100 gals. of milk daily into cheese ?

The British Dairy Farmers' Association.

PATRON.—HIS MAJESTY THE KING.

PRESIDENT, 1925.—Major J. A. MORRISON, D.S.O.,
Basildon Park, Reading.

VICE-PRESIDENTS.

The MARQUIS OF CREWE, K.G., P.C., D.C.I., Crewe Hall, Crewe.
EARL OF DARTMOUTH, P.C., K.C.B., Patsall, Wolverhampton.
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London, S.W. 1.
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 Chick, John H., Wynford Eagle, Dorchester, Dorset
 Chick, W. D., Compton Valence, Frampton, Dorchester, Dorset
 Chick, W. J., Stratton, Dorchester, Dorset
 Chillingworth, A. F., & Sons (represented by A. F. Chillingworth), Reddown Farm, Highworth, Wilts
 Chiswick Soap and Polish Co. (represented by Chas. Mason), Chiswick, London, W. 4
 Chivers & Sons, Ltd. (represented by John Stanley Chivers), Histon, Cambridge
 Clare, A. J., Market Place, Wells, Somerset
 Clark, Thomas, Beeches Farm, Botcherby, Carlisle
 Clark, William, Himalayan Dairy, Ghoom D. H. Ry., India
 Clarke, Col. Stephenson R., C. B., J. P., Borde Hill, Cuckfield, Sussex
 Clarke, E. H., Cossington Grange, Leicester
 Clarke, E. W., Chilborough House, Aylesbury, Bucks
 Clarke, Joseph, Park Hill, Tring, Herts
 Clarke, P. R., Boltons Park Farm, Little Heath, Potters Bar
 Clarke, R. A., & Sons (represented by C. J. Clarke), Manor Farm, Chisclborough, Stoke-under-Ham.
 Clay, Col. H. H. Spender, C.M.G., Ford Manor, Lingfield, Surrey
 Clement, Sir Thomas, 27, South Albion Street, Glasgow
 Clifton-Brown, E., J.P., Burnham Grove, Burnham, Bucks (L.M.)
 Colchrane, A., Nether Craig, Kilmarnock (L.M.)
 Cocks, R. Ernest, J.P., X.L. Dairy, Saltash Street, Plymouth
 Cole, Henry F., Tilly Manor Farm, West Harptree, Bristol
 Cole, W. E., N.D.A., N.D.D., Dyrham, Staple Hill, nr. Bristol
 Colebrook, W. M., The Meadows, Claygate, Surrey
 Collet, Sir Mark E., St. Clere, Kemsing, Sevenoaks
 Collins, William, Crafton, Leighton Buzzard, Beds
 Collis, Miss A. H., Church Farm, Panteg, Pontypool Road, Mon.
 Colnett, A., County Offices, Bedford
 Compton, Alfred H., 46, Russell Road, Kensington, London, W. 14 (L.M.)
 Comyns-Lever, Mrs. E., 2, Oakwood Avenue, Beckenham, Kent (L.M.)
 Conroy, George L., Douglas Wharf, Putney, London, S.W. 15
 Cook, Miss E. G., Heath House, Tetsworth, Oxon
 Cook, William, & Sons (represented by A. J. Thompson), Orpington House, St. Mary Cray, Kent
 Cook, William H., The Model Poultry Farm, Orpington, Kent
 Cooke, Miss W. M., Crook Farm, Denton, Ben Rhyddling
 Cooper, Major R. W., Rush Court, Wallingford, Berks
 Cooper, Sir George A., Bart., Hursley Park, Winchester (Agent, T. W. Ashton, Estate Office, Hursley Park, Winchester, Hants)
 Coote, Col. Charles H. Eyre, Highgate House, Creaton, Northampton
 Copley, S. W., Deacons Hill, Elstree, Hertfordshire
 Corbett, Hon. Godfrey, M.C., Rowallan, Kilmarnock (L.M.)
 Corby, J. Stanley, Cuckmans, St. Stephens, St. Albans
 Cornall, Fred, Lake Hill, Bury, Lancs
 Corner, Dr. Harry, Brook House, Southgate, N. 14
 Cornish, Mrs. C. J., Steyne, Bembridge, Isle of Wight
 Corrie, Harold, Heath House Farm, Lowfield Heath, Surrey
 Cory, Percy W., Manor Farm, Notgrove, near Bourton-on-the-Water, Glos
 Cory, Sir Clifford J., Bart., Llantarnam Abbey, Monmouthshire
 Coryton, Capt. J. T., Pentillie Castle, St. Meillon, Cornwall
 Coster, J., & Sons (represented by J. Coster), Gouda, Holland
 Cotterell, R. L., Ruscombe, Twyford, Berks
 Coward, Miss F., Cumberland and Westmorland Farm School, Newton Rigg, Penrith.
 Cowell, Miss Mary A., Calhows Hill, Ledbury, Herefordshire
 Cowley, William A., Ovingdean Grange, near Brighton, Sussex
 Cox & Sons (represented by A. Cock), Northwold Buildings, Northwold Road, Stoke Newington, London, N. 16
 Cox, Harry T., Bishops Stortford Dairy Farms, Bishops Stortford, Herts
 Cox, James, jun., Manor Road Farm Dairy, Barnet, Herts

Cox, Miss E. Lillian, Chewton Field Farm, Chewton Mendip, Bath, Somerset
 Cox, Miss Vera, Powean, Dunloe, Cornwall
 Cox, William J., The Cardiff Milk Supply, City Road, Cardiff, Glam
 Crabtree, James, 25-39, Price Street, Birkenhead, Cheshire (L.M.)
 Cracknell, John G., Lowcop, Bridston, Ross, Herefordshire
 Craufurd, Mrs. E. L. H., Dunlop Place, Dunlop, Ayrshire
 Crawford, Hugh W. B., Forneth, Castle Douglas
 Crawford, Lady Gertrude, Coxhill, Lymington, Hants (L.M.)
 Crawford, Miss A. W., Harper Adams Agricultural College, Newport, Salop
 Crawler, Miss F. M., N.D.D., B.D.F.D., 1, Richmond Road, Exeter
 Crewe, Marquis of, P.C., D.C.L., Crewe House, Curzon Street, W. (Communications to Prof. W. McCracken, Englesea House, Crewe)
 Crompton, Chas. W., Hall Green, near Wakefield, Yorks
 Crompton, James R., Greenhayes, Banstead, Surrey
 Cross, George, British Empire Hotel, De Vere Gardens, Kensington, London, W. 8
 Cross, J. L., Catthorpe, Rugby
 Crow, Robert, Jealots Hill Farm, Bracknell, Berks
 Crowe, John, Woodhouse, Aldford, Chester
 Crowson & Son (represented by I. Bidwell), 61, Charterhouse Street, London, E.C. 1
 Croxon, A. B., The Limes, Burnham-on-Crouch, Essex
 Crumpler, Jesse, Longlands, North Coker, Yeovil
 Cunningham, Mrs., 1156, Argyle Street, Glasgow
 Cupiss, Francis, Ltd. (represented by Walter Clarke), The Wilderness, Diss, Norfolk
 Currie, Laurence, Minley Manor, Farnborough, Hants
 Curtis, Mrs. C. J., 46, Merton Hall Road, Wimbledon, London, S.W. 19
 Cuthbert, C. R., St. Margaret's Cottage, Penn, Bucks.

DAIRY OUTFIT CO., Ltd. (represented by Sir Sidney J. Pocock, J.P.), 251, Pentonville Road, King's Cross, London, N. 1

Dalrymple, Miss Mary, Elliston, St. Boswells
 Dalrymple-Hamilton, Col. N., Bargany, Girvan, Ayrshire (L.M.)
 Darrell, Miss Mary, Ebberston, Snainton, S.O., Yorkshire
 Dartmouth, Earl of, P.C., K.C.B., Patshall, Wolverhampton
 Davies, Edward, Plas Power Home Farm, Wrexham
 Davies, General H. F., Elmley Castle, Pershore (L.M.)
 Davies, Ben, 28, King Street, London, W. 1
 Davies, Miss Alice, Vicarage Lane, Rhuddlan, North Wales
 Davis, Colonel, Salt Hill House, Slough, Bucks
 Davis, Mrs. H., 75, George Street, Oxford
 Davy, A. Cedric, Paternoster Row, Sheffield, Yorks
 Dawson, George, Dawson Bros., Leeds, Yorks
 Dawson, Miss E. M., 1, College Hill, Shrewsbury
 Day, Chas. F. (representing Day & Day), 237-239, Lower Clapton Road, Clapton, London, E. 5
 Day, Charles T., 237-239, Lower Clapton Road, Clapton, London, E. 5
 Day, Major E. C., Becketts, Chiddingstone, Kent
 Day, Son, & Hewitt (represented by G. S. Hewitt), 22, Dorset Street, London, W. 1 (L.M.)
 Dean, F. W., St. Germain's Farm, St. Albans, Herts
 Dearden, Miss D. V., British Dairy Institute, Reading
 De Bathe, Lt.-Col. Max, c/o Lloyds Bank Ltd., 6, Pall Mall, London, S.W. 1
 Debenham, Miss Alice (representing Messrs. E. R. & A. Debenham), Bladen Dairy Farms, Brians Puddle, Dorchester
 DeLasaux, C. R., 24, West Hill, Sydenham, London, S.E. 26
 De la Warr, Earl, Fishers Gate, Withyham, Sussex
 Delmé-Radcliffe, Lt.-Col. A., D.S.O., Shenley House Farm, Headcorn, Kent (L.M.)
 Denchfield, F. T., Manor House, Tingwick, Buckingham
 Dennis, Mrs. Cyril, Oakley Hall, Market Drayton, Salop
 Derby, Earl of, K.G., Knowsley, Prescott, Lancs (all communications to Robert Galbraith, The Home Farms, Knowsley, Prescott)
 Derbyshire Farmers, Limited (represented by W. Woodall), 19, Corn Market, Derby
 Desborough, Lord, K.C.V.O., Taplow Court, Taplow, Bucks
 Deverell, Edgar T., Dormers Leys, Tetworth, Oxon

- Dewar, Lord, The Homestall, East Grinstead, Sussex
 Dewe, W., Ashampstead, near Reading
 De Winton, Seton, Franks, Upminster, Essex
 Dickie, Robert, Knockenjig, Sanguhar, Dumfriesshire
 Dickinson, B. O., Pharos, Burnham-on-Sea, Somerset
 Dickson & Robinson (represented by F. Robinson), Cathedral Street, Manchester
 Lancs
 Dickson, Miss K., Sutton Place Cottage, Abinger, Surrey
 Dietz, Lt.-Col. B. R., Withycombe House, Exmouth, Devon
 Dimmock, J. B., Shotford Hall, Harleston, Norfolk
 Dixon, T. & M., Ltd. (represented by R. Dixon), Tardebigge, Bromsgrove Worcester
 Done, John, Manor House, Malpas, Cheshire
 Doughty, Wilfrid, V., J.P., Ickleford Manor, Hitchin, Herts
 Douglas, F. W. R., Spitzbrook House, Yalding, Kent
 Douglas, John, 142, Hanham Road, Kingswood, Bristol
 Douglas, London Macqueen, Newpark, West Calder, Midlothian
 Douglas, W. Loudon, Douglas Wharf, Putney, London, S.W. 15
 Douglas, W. E., Douglas Wharf, Putney, London, S.W. 15
 Dover, J. G., The Homestead, Gt. Missenden, Bucks (L.M.)
 Doyle, Miss A. M., Munster Institute, Cork
 Drakeley, Dr. T. J., Ph.D., M.Sc., F.I.C., F.C.S., M.I.M.E., 69, Rosebery Road,
 Muswell Hill, London, N. 10
 Drew, Edward T., 21, Congo Road, Plumstead, London, S.E. 18
 Drummond, Prof. R. J., Dairy School, Kilmarnock
 Drysdale, John, 5, St. Andrew Square, Edinburgh
 Duchess of Devonshire Dairy Co., Ltd. (represented by T. R. Mills), Tiverton
 Junction, Cullompton, Devon
 Duckworth, Capt. E., Hooton Farm, Hooton, Birkenhead
 Dudgeon, Major C. Randolph, Cargen-Holm, Dumfries
 Dugdale, Major J. Gordon, The Abbey, Cirencester
 Dunlop, George, Craigaploch, Castle Douglas
 Dunlop, Quintin, Greenan, Ayr
 Dunn, Henry (L.M.)
 Dunstan, Mrs. R. J., Porloe, Mylor, nr. Falmouth
 Dunstan, R. J., Porloe, Mylor, nr. Falmouth
 Du Val, John, La Caroline, St. Peter's, Jersey
 Dyer & Son (represented by T. Dyer), Ilston, Lillesdon, Leicestershire

 EASTON, Edward G., 43, Gt. Tower Street, London, E.C. 3
 Eaton, George T., Thurston Hall, Framfield, Sussex
 Edmead, John W., Bury Fields House, Guildford
 Edwards, Henry, Holland Road, West Kensington, London, W. 14
 Edwards, John, Newton, Ellesmere, Salop
 Edwards, John P., Heath Farm, Bromsgrove, Worcs
 Edwards, Major B. M., Hardingham Hall, Hingham, Norfolk
 Edwards, Miss Katie, Ty-draw Farm, Nelson, near Cardiff
 Edwards, Sidney, Blackbirds' Nest, Bassaleg, Newport, Mon
 Eglinton and Winton, Earl of, Horns Lodge, Tonbridge, Kent
 Ellinger, Prof., Landbohøjskole, Copenhagen (H.M.)
 Ellis, G. W., Brinning, Moretonhampstead, S. Devon
 Ellis, H. S., Great Brinning, Moretonhampstead, S. Devon
 Ellison, R., Colonial House, Tooley Street, London, S.E. 1
 Elmhurst Farming and Trading Co., Ltd. (represented by H. St. George Voules),
 Elmhurst Farm, Slinfold, Sussex (L.M.)
 Elveden, Viscount, C.B., C.M.G., M.P., 11, St. James's Square, London, S.W. 1
 Elwes, Lt.-Col. W., Oakdale, Ockley, Surrey
 Emberton, William, Home Farm, Doddington, Nantwich, Cheshire
 Emerton, Frank, 78, Grange Drive, Winchmore Hill, N. 21
 Emerton, H. J., Halesworth, 76, Windmill Hill, Enfield
 Enamelled Metal Products Corporation, Limited (represented by C. J. Porter), 56,
 Kingsway, London, W.C. 2
 Enock, Arthur Guy, The Hut, Hurstmonceaux, Sussex
 Enock, G., Margaret Street Works, Windus Road, Stamford Hill, London, N. 16
 (L.M.)

Errington, Roger, Victoria Mills, Sunderland
 Erwood, H. J., 47, Whitworth Road, Plumstead, London, S.E. 18
 Evans, J., Harrington House, Cheltenham
 Evans, Mrs. E. W., Crickleaze House, near Chard, Somerset
 Evans, Richard H., Barclays Bank Chambers, Pwllheli, Carnarvonshire
 Evans, Sir Walter H., Bart., Wightwick Hall, near Wolverhampton
 Evelyn, Mrs. J. H. C., Wotton House, near Dorking, Surrey (All communications to Estate Office, Wotton, Dorking)
 Evens, John, Burton, Lincoln
 Everard, W. Lindsey, Ratcliffe Hall, Leicestershire (L.M.)
 Eves, Major H., Rosemary Farm, Brenchley, Kent
 Ewing, Hugh, Birtley Farm, Bramley, Guildford, Surrey
 Ewing, M., Ashlands House, Crewkerne, Somerset
 Ewing, W., Gate Street Farm, Bramley, Surrey
 Exeter Co-operative & Industrial Society, Ltd. (represented by F. Hannaford, 6 & 7, Eastgate, Exeter)
 Express Dairy Company, Limited (represented by R. H. Hewson), Tavistock Place, London, W.C. 1
 Eyre, George, 18, Redcliffe Square, London, S.W. 10
 Ezra, Capt. E., Lock, Partridge Green, Sussex (Agent : F. P. Musgrave)

FAIRWEATHER, E. C., Avisford Park, Arundel, Sussex
 Farmer, John T. H., Devonia, Cippenham, Bucks
 Farmer, Samuel Wm., Little Bedwyn, Wilts
 Farmers' and Cleveland Dairies Company, Limited (represented by J. T. Horner), 12 and 13, East Street, Gifford Street, Caledonian Road, London, N. 1
 Farwig, H. A., Mapleton Dairy Company, Mapleton Farm, Edenbridge, Kent
 Fawkes, Algernon (L.M.)
 Fawkes, F. H., Farnley Hall, Otley, Yorks
 Fawkes, Tennyson, Church Farm, Leonard Stanley, Stonehouse, Glos
 Fearnall, P., Calverhall, Whitchurch, Salop (L.M.)
 Feilding, Lt.-Col. Viscount, C.M.G., D.S.O., Street Ashton House, Rugby
 Fergusson, D., The Birks, Stamfordham, Newcastle-on-Tyne
 Ferrand, G. F., Clonville Lodge, Andover, Hants
 Fewings, J. H., Ferndale, Bream, Glos
 Fewson, Mrs. A., 17, Ripplevale Grove, Barnsbury, London, N. 1
 Fielding, A. Ross, The Leazowes, Hilderstone, near Stone, Staffs
 Finch, Bernard, Flitwick, Beds
 Fish, A. R., Holme Mead, Hutton, near Preston
 Fisher, Fred T., Pinkneys Court, Pinkneys Green, Maidenhead (L.M.)
 Fison, Joseph, & Co. Ltd. (represented by Harry M. Ennals), Ipswich
 Fitzroy, Capt. the Hon. E. A., M.P., Fox Hill, West Haddon, Rugby
 Fitzwalter, Lord, Goodnestone Park, near Canterbury, Kent
 Fletcher, H. G., The Galloway Creamery, Ltd., Stranraer
 Fletcher, Miss M. J., 28, Park Road, Chelmsford
 Folkestone, Viscount, Longford Castle, Salisbury (L.M.) (Agent : R. E. Macan)
 Follows, A. J., Metchley Park, Edgbaston, Birmingham, Warwickshire
 Foot, Mrs. R. M., White Hill, Berkhamsted (L.M.)
 Forester, Capt. F., M.F.H., Saxelbye Park, Melton Mowbray
 Formby, Wm., The Cedars, Stratton St. Michael, Long Stratton, Norfolk
 Forster, Miss Jane, Dairy Institute, Worleston, Nantwich, Cheshire
 Fortescue, Earl, Castle Hill, South Molton, North Devon (L.M.)
 Fortescue, George G., Boconnoc, Lostwithiel, Cornwall
 Forteviot, Lord, Dupplin Castle, Perthshire (L.M.)
 Fortnam, Joseph T., Rudge Manor, Ashley, Market Drayton
 Fortune, Robert, Newhouse, Cranleigh, Surrey
 Foster, Thomas, 27, Church Street, Ormskirk, Lancs.
 Four Oaks Spraying Machine Co. (represented by W. C. G. Ludford), Four Oaks, Sutton Coldfield, Birmingham, Warwickshire
 Fowler and De la Perrelle (represented by T. W. Bridger), Porters Lane, Southampton
 Fowler, W. Herbert, J.P., Chussex, Walton-on-the-Hill, Epsom (L.M.)
 Fownes, Mrs. I., Yetminster, Sherborne, Dorset

- Foxton, J., Benningholme Hall, Skirlaugh, near Hull
 Francis, E. J., Manor Farm, Stour Provost, Gillingham, Dorset
 Francis, F. S., Wilkin Throop Farm, Templecombe, Som
 Franklin, Mrs. C., Chartridge Lodge, Chesham, Bucks
 Franklin, H., Coltsfoot Farm, Datchworth, Herts
 Frederickson, Capt. F., Holbrook, Ockley, Surrey
 Freeman, Miss Z. S., Dial House, Shepperton-on-Thames
 Freeth & Pocock (represented by Sir Sidney J. Pocock, J.P.), 50, Hill Road, Wimbledon, S.W. 19
 Freeth, Capt. Edwin, 81, West Hill, Putney, London, S.W. 15
 Fremlin, Walter T., Milgate Park, Maidstone, Kent
 French, W. T., & Son (represented by A. E. French), St. Mary Street, Ladywood, Birmingham
 Fricker, B. J., South Eastern Agricultural College, Wye, Kent
 Fuller, Major Robert F., J.P., Great Chalfield, Melksham, Wilts (L.M.)
 Fullwood & Bland (represented by Charles Bland), 31, Beviden Street, Hoxton, N. 1
 Fulton, Robert, Rectory Farm, Ridgeway, Enfield
 Furber, P. J., Melton Lodge, Whitchurch, Salop
- GABELL, C. D., Ltd. (represented by C. D. Gabell), 104, Albion Road, Stoke Newington, London, N. 16
 Gamage, A. W., Ltd. (represented by John S. Parker), Horticultural Dept., Holborn, E.C. 1
 Gardner, Mrs. Chas. H., Rectory Farm, Pulloxhill, Amptill, Beds
 Garfit, Capt. H. de C. B., J.P., Nightingale Place, near Polegate, Sussex
 Garne, W. T., Aldsworth, near Northleach, Glos (L.M.)
 Garrad, G. H., Springfield, Maidstone
 Garrard, F. R., The Hall, Framlingham, Suffolk (L.M.)
 Gartons, Ltd. (represented by George P. Miln), Warrington
 Gascoigne Co., Ltd. (represented by G. H. Gascoigne), 27/28, Market Place, Reading
 Gibbons, Henry H., Model Farm, King's Langley, Herts
 Gibson, Miss Peggie, Dairy School, Kilmarnock
 Gibson, Mrs. M., Cofton Farm, Starcross, near Exeter
 Gibson, William, C.B.E., Walton Warren, near Burton-on-Trent
 Gilbert, C. E., 47, Lenton Road, The Park, Nottingham
 Gilbert, F. W., The Lawn, Chellaston, Derby
 Giles, Henry, Stockers Farm, Rickmansworth, Herts
 Gillett, Arnold, Ridgewood, Chorley, Lancs
 Gilmour, W. P., Balmangan, Kirkcudbright
 Gisborne, Col. Lionel, C.M.G., Lingen Hall, Bampton Bryan, Herefordshire (L.M.)
 Gittins, William H., The Hall Farm, Ruyton-of-the-Eleven Towns, Shropshire
 Glazebrook, R., The Lydiate, Willaston, Cheshire
 Gloucester Incubator Company, Ltd. (represented by E. L. Godfrey), Woodchester Mills, near Stroud, Glos
 Glover, Wilfred, The Retreat, Willoughby, Waterleys, near Leicester
 Godfrey, J. N., Sharpenhoe, near Amptill, Beds
 Godfrey, John, & Co., Ltd. (Represented by C. B. Carter), Railway Gates, Stamford
 Godman, Lt.-Col. A. F., East House, Great Smeaton, Northallerton, Yorks
 Goemans, H. E., Foxbury Estate Office, Foxbury, Chislehurst, Kent
 Golding, Capt. John, D.S.O., Cutbush Lane, Shinfield, near Reading
 Golding, W. J., Bowens, Penshurst, Kent
 Goldsmiths & Silversmiths Co., Ltd. (represented by J. W. Rice), 112, Regent Street, London, W. 1
 Golland, Tom J., The Mill Farm, Appleby, Doncaster, Yorks
 Good Rich Products Co., Ltd. (represented by J. Stenton), 90, Freeman Street, Grimsby
 Goode, C. N., The Haydens, Bletsoe, Bedford
 Goodman, J. R., South Lodge, Holdenby, Northampton
 Goodwin, P., Bibney, Whitchurch, Salop
 Goodwin, Thomas C., Leighton Grange, Crewe
 Gordon, Miss M. E., 51a, Ashby Road, Loughborough

- Goschen, Kenneth, Swanthorpe House, Crondale, Hants
 Gosling, Miss E. F.
 Gosney, G. F., 234, Strand, London W.C. 2
 Grabham, A., 139, Englefield Road, Essex Road, London, N. 1
 Grace, E. G., Woolston Farm, Stogursey, near Bridgewater
 Graham, Wm., Eden Grove, Kirkbythore, Penrith, Cumberland (L.M.)
 Grant, A. P. F., M.B.E., Westlands, Horley, Surrey
 Grant, Mrs. M. A., Westlands, Horley, Surrey
 Grant, Reginald, 505, Avenue Joffre, Shanghai, China
 Grant, R., Customs Branch, Australia House, Strand, W.C. 2
 Grant, W. J., 42, Llanthewy Road, Newport, Mon.
 Gray, George E., Fairstead, Great Warley Essex (L.M.)
 Gray, Robert, The Manor, Lechlade, Glos
 Grayson, Thomas, 16 and 17, Queen Street, Derby
 Great Western and Metropolitan Dairies, Ltd. (represented by Sir Wm. Price), 34, Palace Court, Bayswater, London, W. 2
 Green, A. W., Stoke Abbey Farm, Stoke Bishop, Bristol
 Greenall, Sir Gilbert, Bart., C.V.O., Walton Hall, Warrington, Lancs (Agent, W. Bainbridge, Walton, Estate Office, near Warrington)
 Greenwood, Lt.-Col. Charles S., M.B.E., J.P., Swardcliffe, Birstwith, Harrogate
 Gregory, J., Barge Farm, Taplow, Bucks.
 Gregory, W., & Co., Ltd. (represented by W. Gregory), Wellington, Somerset
 Griffin, J. Whitehouse (L.M.)
 Griffiths, Frank, Tyddyn Farm, Mold, N. Wales
 Griffiths, Miss M. F., Standen Manor Farm, Hungerford, Berks
 Grimsdale & Sons, Ltd. (represented by D. Herbert Grimsdale), 54, Great Tower Street, London, E.C. 3
 Grimsdell, Henry John, 36, Snow Hill, London, E.C. 1
 Gurnell, Frank, West End Farm, Ashby, Scunthorpe, Lincs
- HALE, Arthur, C., Upper Lowlands, Buxted, Sussex
 Hale, Horace, Kingswood, Tandridge, Oxted, Surrey
 Hall, Miss A., Hafodyrnyns, near Crumlin, Mon.
 Hall, Miss E. M. G., Craycombe House, Pershore, Worcester
 Hall, R. Charles, The Wend Farm, Coulsdon, Surrey
 Hall, Thomas, Marske Farm, Marske-by-the-Sea, Yorks
 Hambleton, Viscount, Greenlands, Henley-on-Thames. (Agent, W. F. Holt Beever, Estate Offices, Yewden, Henley)
 Hambro, H. C., The Lodge, Tadworth, Surrey
 Hamilton, Miss M. H., Coddington Court, Ledbury, Herefordshire
 Hamilton and Brandon, The Duchess of, Hamilton Palace, Lanarkshire
 Hamlyn & Co., Ltd. (represented by G. W. French), 45, Coplestone Road, Peckham, London, S.E. 15
 Hampshire, Frank H., Ash Villa, Upperrhong, Holmfirth, near Huddersfield
 Hand, J. Denyer, *The Dairy Offices*, 21, Farringdon Avenue London, E.C. 4
 Hankey, Colonel Walter A. (L.M.)
 Hannant, F. Charles, Saltwood House, Hanworth Road, Hounslow
 Hansen's Laboratory, Ltd (represented by J. C. Moller), Astor House, Aldwych, London, W.C. 2
 Hardcastle, Major H. M., Bradshaw Hall, Bolton-le-Moors, Lancs
 Hardie, W., Manor Farm Dairy, 50, St. Leonards Road, Bexhill-on-Sea, Sussex
 Harding, E. G., J.P., Foscote, Grittleton, Chippenham, Wilts
 Harding, G. P., J.P., Rogerstone Grange, Chepstow, Mon.
 Hardman, N., The Elms, Barton, Preston, Lancs
 Hardy, Charles, Argis Hill, Rotherfield, Sussex
 Hare, Lady Kathleen, Brokenhurst Park, Brockenhurst, Hants
 Harewood, Earl of, Harewood House, Leeds, Yorks
 Harmsworth, V. G., Valley Holme, Horstead, Keynes, Sussex
 Harries, T. Ll., Pilrboth, Llanstephen Road, Carmarthen
 Harrington, J. L., Beech House, Barrington Road, Altrincham
 Harris (Calne) Ltd., C. & T. (represented by R. P. Redman), Calne, Wilts
 Harris, Stanley, Aspley Guise, S.O., Bedford (L.M.)
 Harris, W. J., The Ferns, Rogerstone, Mon.
 Harrison, A. Lister, J.P., 2, Whitehall Court, London, S.W. 1
 Harrison & Sons (represented by J. Harrison, junr.), St. James Street, Leicester

- Harrison, R. C. H., Shiplake Court, Henley-on-Thames, Oxon
Harrison, McGregor & Co., Ltd. (represented by T. D. Harrison), Albion Iron Works, Leigh, Lancs
Hart, Kenneth E. F., The Limberlost, Heathfield, Sussex
Harvey, D. G., Wooston Farm, Moretonhampstead, S. Devon
Hasler & Co. (represented by W. Hasler), Dunmow, Essex
Hassell, A. W., Tudor Farm, East Harptree, Bristol
Hastings, Lord, Melton Constable Park, Norfolk
Hatfield, E., Ministry of Agriculture and Fisheries, Welsh Office, Aberystwyth
Hawes, Miss G. B.
Hawes, Thomas, Bent Hill Farm, near Buckingham
Hawkins, A. W. Bailey, Stagenhoe Park, Welwyn, Herts
Haworth, Alfred, B.A., J.P., Ravelstone, Manley, Warrington
Hay, A., East Anglian Institute of Agriculture, Chelmsford
Hay, Percy T., 3, Brookfield Park, Highgate Road, London, N.W. 5
Hay, W. D., B.Sc., Somerset Farm Institute, Bridgwater, Som.
Hayward, Colonel J. F. Curtis, Quedgeley, Gloucester (L.M.)
Hearnshaw, R. Fletcher, Foxhill, Burton Joyce, Nottingham (L.M.)
Heath, Mrs. Enoch, The Elms Farm, Raglan, Mon.
Heaton, Stuart, Poplar Farm, Iken, Tunstall, Suffolk
Heavens, William, Tilsey Manor, Bramley, near Guildford, Surrey
Heaver, Exors. of the late John W. T., Ratham House, Chichester, Sussex
Hebditch, Harry, Poultry Farmer and Appliance Maker, Martock, Somerset
Heller, S. & Sons (represented by I. Heller), 2, Colvestone Crescent, London, E.S.
Henderson, A. Gavin, Buscot Park, Faringdon, Berks (Agent, Walter Crosland, Estate Office)
Henderson, Miss Marjorie, The Riding, Hexham, Northumberland
Hepworth, Miss N. M., Red Court, Ealing, London, W. 5.
Herbert, C. A., Heydown Farm, Heathfield, Sussex
Herbert, F. F., The Graig, Penalt, Mon.
Heseltine, Lieut.-Col. John E. N., Hawking Down, Hindon, Salisbury
Heseltine, Major G., The Hill, Lutterworth.
Hewitt, F. Vernon, Oaklands, Quorn, Leicestershire
Hewthorn & Co., Ltd., (represented by Charles Simpson), 70, Finsbury Pavement, London, E.C. 2
Heywood, N. A., J.P., Glevering Park, Wickham Market, Suffolk (L.M.)
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Hincks, Henry Thorp, Keyham, near Leicester
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Holborow, J. P., Northfield Farm, Charlton Kings, Glos
Hole, Sidney, Yew Tree House, Albourne, Hassocks, Sussex
Hollington, Alfred Jordan, Forty Hill, Enfield, Middlesex
Hollingworth, E., C.B.E., Moordale, Dobcross, Yorks
Holm, H. C., The Grange, Carlton Curliu, Leicester
Holman, H., J.P., Holcombe Down, Teignmouth, Devon
Holmes, John, Holmlea, Newcastle Road, Shavington, Crewe
Holmes, W. F., The Thatched House, Hampton Wick, Middlesex
Holmes-Hunt, W., Crawley Down, Sussex
Holt-Thomas, G., North Dean House, Hughenden, Bucks

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 Hooker, John Henry, The Pirs, Buckingham
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 Long, Robert, Upper Stondon, Sheffield, Beds
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 Lucas, Lt.-Col. W. F., Beech Place, Stowmarket, Suffolk
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Lyon, James, Orange Court Farm, Guildford.

Lyon, Lt.-Col. Charles, Appleton Hall, Warrington, Cheshire (L.M.)

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Martin, T. L., Ashe Warren House, Overton, Hants

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Masson, John, Attimore Hall Farm, Hatfield, Herts

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Matthews, Miss Jessie, University College, Reading

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Meyer, Fred., Kingsthorpe, Northampton

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- Miller, John R., Midkelton, Castle Douglas
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 Moore, W. P., Whitehall, Mealsgate, Cumberland (L.M.)
 Moores, James, Greylands, Princes Risborough, Bucks
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 Morgan, J. Pierpont, Estate Office, Wall Hall, Watford, Herts. (All communications to John Fleming)
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 Morley, Thomas, Gallant's Farm, Whetstone, Middlesex
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 Morris, Capel, Ingleside, The Drive, Hove (L.M.)
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 Morrison, Major J. A., D.S.O., Basildon Park, Reading
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 Nelson, W. H., The Launds, Cockerham, near Lancaster (L.M.)
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 Newton, Herbert A., Meadow Farm, Saham Toney, Thetford, Norfolk
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 Nisbet, John, Great Blunts, Ingatstone, Essex
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 Northbrook, Earl of, Stratton, Micheldever Station, Hants
 Northumberland, Duke of, Alnwick Castle, Northumberland
 Norton, E. P., Whitchurch, Salop
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 Nurse, F. G., Wick, Coxley, Wells, Som.
 Nurse, T. Johnson, Ashdene, March, Cambridgeshire
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 Palmer, Mrs. W. Howard, Heathlands, Wokingham, Berks
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 Pearson, Sir Edward E., Brickendonbury, Hertford
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ABBREVIATIONS—(H.M.) Honorary Member. (L.M.) Life Member.

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